

S. HRG. 110-22

ASBESTOS: STILL LETHAL/STILL LEGAL: THE NEED TO BETTER PROTECT THE HEALTH OF AMERICAN WORKERS AND THEIR FAMILIES

HEARING

BEFORE THE

SUBCOMMITTEE ON EMPLOYMENT AND
WORKPLACE SAFETY

OF THE

COMMITTEE ON HEALTH, EDUCATION,
LABOR, AND PENSIONS
UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

ON

EXAMINING ASBESTOS, FOCUSING ON EFFORTS TO BETTER PROTECT
THE HEALTH OF AMERICAN WORKERS AND THEIR FAMILIES

MARCH 1, 2007

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ASBESTOS: STILL LETHAL/STILL LEGAL: THE NEED TO BETTER PROTECT THE HEALTH OF AMERICAN WORKERS AND THEIR FAMILIES

THURSDAY, MARCH 1, 2007

U.S. SENATE,
SUBCOMMITTEE ON EMPLOYMENT AND WORKPLACE SAFETY,
COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS,
Washington, DC.

The committee met, pursuant to notice, at 10:02 a.m. in Room 430, Dirksen Senate Office Building, Washington, DC., the Hon. Patty Murray [chairman of the subcommittee] presiding.

Present: Senators Murray [presiding], Brown, and Isakson.

OPENING STATEMENT OF SENATOR MURRAY

The CHAIRMAN. This subcommittee will come to order. I am very pleased to convene the first hearing of the Senate Employment and Workplace Safety Subcommittee of the 110th Congress and I want to thank our Ranking Member, Senator Isakson, who has worked with me in the past in reverse order but I look forward to working with you on this subcommittee again in this Congress. I want to thank some of our subcommittee members who will be joining us and I especially want to thank all of the witnesses who are here for us today.

The purpose of this hearing is to gather information on the need to ban asbestos, improve public awareness and invest in research and treatment. But before I turn to the policy, I want to introduce you to two people.

Six years ago I held my first hearing on asbestos in the workplace. One of the witnesses at that time was Fred Biekkola. He is from Michigan. He served in World War II and for almost 30 years, Fred worked for a mining company in Michigan where he was exposed to asbestos. Fred testified at my very first hearing back on July 31st of 2001. That hearing was held right here in this room and in fact, he sat right there at that witness table and I'll never forget what Fred told us.

He said, Senators, please make sure that what happened to me won't happen to anyone else. Workers like me are counting on you to protect us. Please don't let us down. Well, I'm sad to say that we did let Fred down. We didn't ban asbestos. We didn't warn the public and we didn't invest in research and treatment.

Fred died of asbestosis and mesothelioma on April 7 of 2004. Sadly, Fred is not the only advocate that we've lost over the years because Congress has failed to act. This is a picture of Brian Harvey. He is a teacher who lived in Marysville, Washington in my home State. Brian stood by my side as I introduced my first bill to ban asbestos back in July of 2002.

Most asbestos victims die within a year of being diagnosed. Brian lived for 6 years after being diagnosed. He knew he was living on borrowed time so he used his time to fight for others. He stood by my side again in 2004 at another press conference. Sadly, Brian died in July 2005.

Now Fred and Brian are not with us but their words hang over this hearing. It is estimated that each year, up to 10,000 Americans die every year from asbestos. Ten thousand Americans every year. I've been at this for 6 years. This is my third bill and I know we cannot wait another year to fix this problem. The stakes are too high. To anyone who says we don't need this bill, I pose one question. How many more Americans have to die before our government finally does the right thing and bans asbestos? We have to do the right thing and I believe we need to do it now.

As I look at this issue, four problems stand out. First, asbestos is deadly. It's so deadly that there is no known safe level of exposure. It only takes a tiny bit of fiber to cause disease. Second, asbestos is everywhere. It's put into consumer and industrial products on purpose every day. We bought these brake pads in a store 3 days ago. They contain asbestos. Brake pads like these ones are on tens of thousands of cars. Any time one of those cars gets their brakes repaired, a mechanic could be unknowingly exposed to asbestos.

Now fortunately, there are alternatives. These brakes I'm holding right here, are made without asbestos and they work just as well. We shouldn't keep selling these kinds of products containing asbestos. We are putting more and more consumers at risk every day by doing that and that's not just brake pads. There are thousands of products that contain asbestos—floor tiles, roofing materials, cement pipes, even hair dryers.

Third, asbestos is still legal. Many Americans assume, as I did, that asbestos is already banned in this country. It is not. In 1989, the EPA tried to ban asbestos but most of those regulations were overturned in a 1991 appeals court ruling. As a result, while new applications for asbestos were banned, asbestos is still being imported and used in consumer and industrial products.

Fourth, research and treatment for asbestos diseases are not very far along. Doctors have been hampered by the lack of research on how asbestos fibers actually cause disease and what treatment strategies work best. Industrial hygienists have been hampered by the lack of research on how to best measure asbestos fibers in the air.

To address this national challenge, I have introduced the Ban Asbestos in America Act of 2007. So let me quickly summarize the bill and then I will turn to Senator Isakson and our witnesses.

First, my bill bans asbestos. It prohibits the importation, manufacture, processing and distribution of products containing asbestos.

Second, my bill dramatically increases and expands research and treatment. It creates a 50 million dollar 10-center asbestos-related disease research and treatment network. It creates a new national asbestos-related disease registry. It supports research at the Department of Defense and launches a study to determine the most promising areas for new research.

And finally, my bill importantly launches a public education campaign to protect and inform Americans of the dangers of asbestos and the treatment options.

I know we can make progress. More than 40 other countries have banned asbestos. Around the world, chlorine producers are phasing out dangerous and inefficient methods in favor of safer and environmentally responsible technology. We need to help our U.S. companies embrace new, greener approaches today.

To help inform our work, we've invited a panel of expert witnesses. Dr. Barry Castleman, Dr. Harvey Pass, Dr. Richard Wilson, Sue Vento and John Thayer. I will introduce them more before they come up before us but I know that each one of them will provide us with useful information and unique perspectives.

I want to thank all of you for coming today to help America join other enlightened countries in banning asbestos.

Now I want to turn to my Ranking Member, Senator Isakson, for his opening remarks.

OPENING STATEMENT OF SENATOR ISAKSON

Senator ISAKSON. Well, thank you Chairman Murray and thank you very much for holding this hearing. I admire your advocacy and appreciate the opportunity to participate today. I particularly want to acknowledge the presence of Sue Vento. I had the privilege of serving in the United States House of Representatives with her husband and had the privilege of meeting her then and we're honored to have you here today.

I appreciate the Chairman also allowing Senator Specter, who will be here in a few moments, to testify. That request was late and I appreciate very much your courtesy in that.

There is no debate that certain forms of asbestos are toxic and are deadly. Over the past 30 years, we've learned the sad truth that exposure to air-borne asbestos fibers pose potentially serious health risk. Continued exposure to air-borne asbestos can increase the amount of fibers that remain in the lung. Once embedded in lung tissue, those fibers, over time, may cause serious lung diseases, including asbestosis, lung cancer and mesothelioma.

We will hear today that there are several types of asbestos. Different forms of asbestos pose different health risks. Any ban passed by Congress should recognize those differences.

The EPA initially proposed a ban of asbestos in the late 1970s. At the time, the United States consumed over 500,000 tons of asbestos, about 7 percent of which was the very toxic amphibole asbestos. The rule was then struck down by the 5th Circuit because the EPA had, according to the court, failed to muster substantial evidence in support of the ban. The Court of Appeals remanded back to the EPA, demanding the agency demonstrate that all asbestos posed an unreasonable risk to Americans.

During the 1990s, the worldwide trade of the most hazardous form of asbestos, amphibole asbestos, ceased. Thus, the very toxic form of asbestos is no longer available in the United States. Essentially, there is a defacto ban put on by all people of reason who recognize the dangers and the fact that it shouldn't be used.

Today, asbestos is still used in the United States albeit very sparingly. According to the U.S. Geological Survey, the United States consumes about 2,000 tons of chrysotile asbestos every year, down from almost 800,000 tons consumed in the mid 1970s. The consumption has decreased by 99.75 percent by industry on its own and with the recognition of the advocacy of people like Senator Murray.

Chrysotile asbestos is used for three purposes only today: roof coatings, the space shuttle motor parts and specified fibers used in the manufacture of chlorine.

Last congress, I was happy to support an asbestos ban, included in Senator Specter and Leahy's Fair Act. Senator Specter and Leahy recognized the important distinctions between various kinds of asbestos and the ban that emerged in their bipartisan bill was a workable and reasonable ban.

In closing, there are many kinds of asbestos. It comes to many different forms. There is room for bipartisan work on this bill to bring it to the floor and I look forward to working with the Chairman to recognize those differences, find out where we can have common ground and move forward in the ban of the most dangerous forms of asbestos.

The CHAIRMAN. Thank you very much, Senator Isakson. We are waiting for Senator Specter to arrive but I think what I will do is have our witnesses go ahead and come forward to the witness table and when Senator Specter arrives, we'll have him give his statement. If our witnesses could come up to the table. I'm going to introduce you quickly while you are moving forward.

We have Barry Castleman with us today. Dr. Castleman is an environmental consultant with a long-term interest in the use of asbestos in the United States and worldwide.

Dr. Harvey Pass, who is a Professor of Cardiothoracic Surgery at New York University School of Medicine and Comprehensive Cancer Center.

Mrs. Sue Vento, who is the widow of Congressman Bruce Vento. He died from mesothelioma in 2000 and let me just thank you for your tremendous work over the years on making sure we continue to work to the right thing.

Professor Richard Wilson is a Research Professor of Physics at Harvard University.

Mr. John Thayer is a pipefitter and supervisor of the 10-man power plant tunnel crew here within the Office of the Architect of the Capitol.

I want to thank all of our witnesses for being here. Before I move to our witnesses, I also wanted to acknowledge one person in the audience, Linda Reinstein. Linda, thank you so much for being here. She is the Executive Director and co-founder of the Asbestos Disease Awareness Organization. Linda knows personally about the tragedy of asbestos. She lost her husband, Alan, to the disease

this past year. Linda, I just want to personally thank you for your commitment and your support. Thank you for being here today.

With that, I'm going to turn to our panel and Dr. Castleman, we will begin with you and your testimony.

**STATEMENT OF BARRY CASTLEMAN, ScD, ENVIRONMENTAL
CONSULTANT AND AUTHOR, GARRETT PARK, MD**

Mr. CASTLEMAN. I've worked for 35 years with U.S. government agencies, nongovernmental organizations and international agencies on asbestos. I also testify as an expert witness about the public health history of asbestos, the subject of my doctoral thesis. I work with other public health workers all over the world on asbestos and we all hope that soon the United States will join the other 40 or so countries that have banned asbestos.

Asbestos is banned throughout the European Union, 27 countries and in many other parts of the world, including Saudi Arabia, Argentina, Australia, Chile, Japan, Kuwait and other countries. Bans have been in effect for 10 years or more in Germany and Italy and Sweden and France. The cars still stop. The roofs don't leak anymore than they did when they had asbestos in the roofing materials. Life goes on and their economies are going on just fine without endangering people by the use of asbestos.

The World Trade Organization has ruled that controlled use of asbestos is unrealistic and has supported national bans on asbestos when the issue was brought up at the WTO about 7 years ago.

In your legislation, there is a possibility that there may need to be some exceptions considered to the ban. The only exception that I know of in the European Union is the exception for the chlorine industry and this was agreed to based on the state of things in 1999, when the European Union voted to have such a ban. If the chlorine industry wishes to have an exemption in the United States to the ban here, they should have to make the case based on the state of technology today and the issue is, can they convert to the membrane cell plants, which are the kind of chlorine plants that have been built all over the world for the last 20 years. It's a superior technology to the asbestos and mercury cell plants.

As noted, the use of asbestos is down to about 2,000 tons a year. The only use that I know of is in roofing materials. There is no exception for roofing materials in Europe. I don't understand why we would need to have one here but again, if companies want to make the claim that they have to continue to use asbestos in such products, your law would provide them the means to press for an exemption at the EPA.

The big problem is imports of asbestos products. We import over 100 million dollars a year worth of asbestos brake linings and brake shoes from countries that use a lot of asbestos. Senator Murray, you wrote to the Head of the Occupational Safety and Health Administration 3 years ago, asking them to look at the imports, the rising imports of brake shoes and brake linings coming in from Brazil, China, Columbia and Mexico and they brushed you off. Since then, the importation of asbestos—of these products has doubled from those countries. So I think it is an urgent matter to revisit this.

Asbestos-cement sheet products have been coming in from Mexico in rising quantities, over 60,000 tons last year and these are dangerous construction materials. If you cut them, saw them, drill them, demolish them, you have exposure, as you'll hear from John Thayer later today. Once you have asbestos in the structure of buildings, it stays there a long time and it can endanger many people through that time.

The U.S. automakers ought to be able to sell cars and replacement parts here that are asbestos-free, just as they do in the European Union. The U.S. brake part manufacturers ought to welcome a ban on imports of asbestos brakes because it competes unfairly against their safer brake products.

With two other scientists, I want to talk now a little about contaminant asbestos. With two other scientists, I filed a complaint a month ago at the Consumer Product Safety Commission over a consumer patching compound called Durham's Water Putty. Now, this is sold from coast to coast at Ace Hardware Stores and the asbestos in this product comes from the talc that they use as one of the ingredients in it. This is a notorious talc from New York, where there has been reports of lung scarring, lung cancer and mesothelioma, going back to the 1940s. And there are deposits of talc, vermiculite and construction stone around the country that have contamination of asbestos and we really need to have a thorough look around at all these sites by the government to root out these kinds of dangers and make sure that people aren't exposed to mortal risks from products like this.

This is actually a banned—asbestos is banned in these consumer patching compounds in the United States. It was banned 30 years ago by the Consumer Product Safety Commission. Just last month, I testified in a case involving a person whose only exposure was that when he was 20 years old, he spent 2 weeks preparing a building for his father to use as a pharmacy and he was doing all this sanding and sweeping and mixing of these dry powders to set up the interior of the building with the drywall patching compounds and this guy—he's my age. He's dying of mesothelioma now as a result of that one exposure. There is no other known exposure in his case.

We need additional help in analysis of asbestos. The method of analysis that is used by OSHA is only considered reliable down to the present permissible exposure limit and at that limit, it's expected that 5 to 10 people per thousand workers will die from lifetime exposure. We need to have more high-power magnification to limit the measurement methods—35 years old. And we need to get NIOSH and other government agencies to come up with an improved method.

The same for bulk sampling of asbestos—the method specified by EPA over 30 years ago is only good down to 1 percent. We need something that can go below 1 percent in analyzing soil samples and minerals and so on.

So to conclude, banning products made with commercial asbestos, I think should be relatively easy and should be very high priority. Stop these importations of these brake shoes and these asbestos-cement products and the rest. And dealing with the contaminant asbestos in these other minerals will be a little more difficult

but that should be expedited. The law should be written in a way that enables bans on the less controversial imported products made with commercial asbestos to take effect as soon as possible. Any product that is made with commercial asbestos that is not under review for possible exemption by EPA should be banned within a year after enactment of this legislation.

Thank you for inviting me to speak. I have a longer prepared statement for the record.

[The prepared statement of Mr. Castleman follows:]

PREPARED STATEMENT OF BARRY CASTLEMAN, SCD

I have been warning mechanics about asbestos hazards in brake repair since 1972, as a local health official in Baltimore. Since then, I have been involved as a public health worker in a wide range of issues involving asbestos in the United States and around the world. I support banning asbestos product manufacture and importation in the United States.

U.S. imports of brake shoes from countries that mine asbestos and manufacture asbestos products are growing and now total over \$100 million annually. There is no surveillance to assure that asbestos brake imports from China, Brazil, Colombia, and Mexico even carry the cancer warning labels "required" by OSHA. We also are importing a lot of asbestos-cement sheet from Mexico. These products are no longer made in the United States, and they compete against safer products made here.

To this day, we are faced with scandals in government efforts to deal with public health asbestos problems, while companies involved in damage suits try to distort public policy to gin up trial court defenses for their historic failure to warn workers using asbestos products. It is my hope that these companies, who now use little or no asbestos, will not oppose the asbestos ban just so they can go on using the argument that the asbestos products they used to sell are still legal for sale in the United States. If Ford and GM oppose an asbestos ban here as they face throughout Europe, they should tell us what they are selling in the United States now, what models of their new vehicles and replacement parts are still made with asbestos. And they should explain why this should be allowed to continue.

I testify as an expert witness in asbestos litigation, usually at the request of plaintiffs. This has given me access to corporate documents not available in public libraries. I tell juries about the corporate and public health history of asbestos, the subject of my doctoral thesis at the Johns Hopkins School of Public Health and an 894-page book, now in its 5th edition (*Asbestos: Medical and Legal Aspects*. Aspen, NY, 2005).

Global Consensus That Asbestos Must Go

Back in 1989, when the U.S. EPA issued rules to phase out the use of asbestos in almost all products, the United States was a leader in moving to ban the manufacture and importation of asbestos products. The EPA rule was overturned in a court challenge, and EPA was unable to persuade the Justice Department to appeal the ruling. Nothing has been banned since 1991 under the Toxic Substances Control Act, and asbestos products continue to be manufactured and imported for use here.

European countries took the lead in issuing national bans on asbestos use in the 1990s and enacted a ban throughout the (now 27) countries in the European Union that came into effect in 2005. Asbestos is also now banned in Chile, Argentina, Uruguay, Honduras, Kuwait, Saudi Arabia, Jordan, Australia, Japan, the Seychelles, New Caledonia, and Gabon. Egypt, Croatia, Vietnam, South Korea, and South Africa are moving to end their consumption of asbestos products.

In the past year, major initiatives on asbestos have been undertaken by the World Health Organization, the International Labor Organization, and the World Bank. The World Health Organization has concluded that "the most efficient way to eliminate asbestos-related diseases is to stop the use of all types of asbestos." The WHO is now working with the ILO to help countries around the world develop national plans to eliminate asbestos use and minimize the hazards from in-place asbestos materials. The World Trade Organization has given its blessing to national asbestos bans. The World Bank is avoiding the use of asbestos-cement materials in tsunami reconstruction in Indonesia. I drafted a guidance note that the World Bank plans to use, to select safer materials in new construction projects and to minimize asbestos hazards in infrastructure renovation.

Current Situation in the United States

At present, 10,000 Americans die every year from our past use of asbestos in this country. The continuing use of asbestos adds to the eventual toll. Liability considerations and regulation have steadily reduced the quantity of asbestos fiber imported and used as a raw material in U.S. manufacturing, but imported asbestos products continue to enter the country, endangering workers and the general public. Workers in other countries make asbestos products we import, in conditions that would not be permitted here under OSHA and EPA standards. The products are distributed here by companies that may not be labeling them as containing an asbestos cancer hazard in accord with OSHA standards. And the distributors of the products sold here may or may not be around to pay compensation, by the time people get sick from these products, if they ever figure out why they were stricken with asbestos diseases. Last, the continuing sale of the asbestos products here undercuts U.S. manufacturers of safer, non-asbestos products, damaging health, contaminating the environment, reducing employment, and harming the U.S. economy.

The United States continues to import substantial quantities of asbestos-cement construction materials and other asbestos products. In 2006, the United States imported over 63,000 metric tons of asbestos-cement sheets from Mexico, a 25 percent increase from the year 2000. These hazardous construction products have not been made in the United States since 1992. Their handling, transport, installation (with cutting, drilling, etc.), renovation, and demolition expose countless U.S. workers and other citizens to occupational and environmental dangers. This is commonly unrecognized as asbestos exposure; and even where it is so recognized, it is from a practical point of view largely uncontrollable by government regulators. The World Trade Organization concluded that the idea of "controlled use" of asbestos-containing construction materials is unrealistic.

The United States imports an increasing amount of brake linings and pads, now over \$120 million worth a year, and an unknown share of these imports is made with asbestos. The U.S. International Trade Commission has refused to separately classify brake friction materials made with asbestos from those made with other materials, so it is not possible to know exactly what the imports of the asbestos brake parts come to. But leading sources of these brake friction material imports are countries that still use (and three of them mine) a lot of asbestos: Brazil, China, Colombia, and Mexico. U.S. brake friction material imports from these countries have risen from \$23 million in 2000, to \$76 million in 2005, and \$90 million in 2006. Automotive friction materials have not been made with asbestos in the United States for the past several years.

OSHA

OSHA standards since 1972 have required that brake and clutch parts made with asbestos bear various warning labels, and none of the manufacturers put warning labels on these products before that time. Litigation of claims by mechanics has disclosed that Ford Motor Company did not start putting OSHA warning labels on the packages until 1980. Chrysler did not do so until 1984. General Motors still hasn't produced documentation of when GM started to warn consumers of their brake parts about asbestos. Yet, it appears from the records I have seen that OSHA has never cited, much less fined, any seller of these unlabeled products for violation of the standard. OSHA was criticized for its poor record of enforcement by Congressman Kucinich (OSHA's Failure to Monitor and Enforce Asbestos Regulations in Auto Repair Shops, Feb. 2004). And when Senator Murray suggested that OSHA monitor the imports of these products from Brazil, China, Colombia, Brazil, and Canada, she was told, "OSHA is not contemplating a warning label survey." (John Henshaw, OSHA Administrator, letter to Senator Murray, Aug. 31, 2004)

OSHA did post a long-delayed factsheet on its Website on July 26, 2006, explaining the mandatory appendix of the current (1994) OSHA asbestos standard applicable to mechanics doing brake and clutch repair. This was immediately challenged by former OSHA chief John Henshaw, urging his former subordinates at OSHA to retract the factsheet and possibly redo it with additional references included. Henshaw threatened that OSHA could be hit with a data quality challenge, the same tactic that had been used to press EPA to withdraw its published brake asbestos guidance document in 2003 (explained below). Henshaw's call precipitated a conference at OSHA that same day, including his successor, Edwin G. Foulke, Jr.

In the flurry that followed, OSHA scientist Daniel Crane was among those who did a technical review of the factsheet. He noted that, in issuing the 1986 asbestos standard, OSHA had relied on NIOSH data showing that asbestos exposures of mechanics exceeded the current permissible exposure limit. "OSHA has no reason to believe that the nature of dust generated in the repair of asbestos-containing brakes has changed since that time." (Aug. 26, 2006)

Notwithstanding this, on November 6, 2006, OSHA threatened the author of the factsheet, industrial hygienist Ira Wainless, with suspension for “failure to perform a comprehensive review of current research.” The “current research” consisted mainly of re-analyses of earlier articles published in scientific journals, commissioned jointly by General Motors, Ford, and DaimlerChrysler, starting in 2001. Line-item billing for Dr. Shannon Henshaw Gaffney’s services appeared 21 times on Chemrisk asbestos litigation bills to the Big Three in 2004, totaling around \$10,000. John Henshaw’s daughter went to work at Chemrisk when she obtained her doctorate in environmental science in 2004. Mr. Henshaw, who departed OSHA on Dec. 31, 2004, told his former subordinates at OSHA last August that there was a lot of litigation over asbestos and brake work, but he neglected to mention that he was involved in it as an expert witness for a leading defendant, Honeywell (Bendix brakes).

After publicity and inquiries from Congress, the OSHA bosses completely withdrew their threat against Mr. Wainless within weeks; they also decided to not retract or revise the fact sheet (A. Schneider, “Brakes warning remains/OSHA statement on asbestos exposure hazard survives challenge,” *Baltimore Sun*, Dec. 17, 2006; E.G. Foulke, OSHA, letter to Rep. George Miller, Dec. 14, 2006).

Mr. Henshaw testified several months ago that he did not know his daughter did asbestos litigation defense work at Chemrisk, where he began to be listed as a “teaming partner” in early 2005, soon after leaving OSHA. He says no one paid him to call OSHA officials about withdrawing the factsheet, which he contends was “poorly written.” Henshaw has never published anything in the peer-reviewed scientific literature, but he read it regularly during his 25 years at Monsanto before becoming the OSHA chief in 2001. (Deposition of John Henshaw in *Blandford*, Dec. 13, 2006)

Henshaw’s approach to his former subordinates at OSHA on a policy matter he was involved in as OSHA chief less than 2 years before may be a violation of the Federal Ethics Act. An examination of this case may suggest areas where the law should apply if it does not yet do so. I understand that the U.S. Office of Government Ethics has explained **18 U.S.C. § 207** as follows:

As an executive branch employee, you are barred permanently from trying to influence any Federal agency or court, by communications or appearances on behalf of someone other than yourself or the United States (i.e., “representational contacts”), on a matter that has parties (such as a contract, grant, or lawsuit), if you have worked on that matter as a Government employee. If the matter was under your official responsibility during your last year of Government service, even if you did not personally participate in it, you are barred from making representational contacts about that matter for 2 years.

Seeding the Literature

The publication and promotion of scientific reviews was key to a brazen litigation defense strategy of General Motors, Ford, and DaimlerChrysler. Defendant corporations have been prevailed upon to disclose copies of the bills received for litigation services by Exponent and Chemrisk. The Exponent bill to the Big Three on Apr. 4, 2003, titled “Technical Support—Asbestos Litigation,” has a line item, “Completion of Meta-Analysis.” Additional charges for “Completion of Meta-Analysis” were billed on May 2, Aug. 1, and Aug. 29, and Oct. 31, 2003. On Jan. 2, 2004, there was a charge of \$19,500 for “Presentation of Mechanic Meta-analysis.” In all, “Presentation at Conferences” was billed seven times between February and November, 2004 as “Technical Support—Asbestos Litigation.” The “Finalization of 2 Submitted Manuscripts” (on garage mechanics epidemiology) was another item in bills for technical support in asbestos litigation to the Big Three (May 28 and July 1 and 30, 2004). Additional Exponent billings to the auto companies in 2004 were for writing responses to separate articles by Drs. Dodson, Lemen, and Egilman.

GM, Ford, and DaimlerChrysler have spent at least \$23 million between 2001 and spring of 2006, for the consulting and publishing services of Exponent and Chemrisk, and scientists including Dennis Paustenbach, Michael Goodman, David Garabrant, Mary Jane Teta, Patrick Hessel, Patrick Sheehan, Elizabeth Lu, Gregory Brorby, and Brent Finley. (D.S. Egilman and S.R. Bohme, “Scientific Method Questioned” *Int. J. Occ. Env. Health* 12: 292–293, 2006; and Exponent and Chemrisk bills produced by in Sept. 2006, in *Rebekah Price v. DaimlerChrysler Corp. et al.*). So, in addition to their technical shortcomings, such as selectivity in what was included in these reviews and what was not, the recent meta-analyses and commentaries of Exponent and Chemrisk authors should be read with it in mind that they were solicited for the purpose of fighting personal injury claims brought by mechanics and their family members. These publications were part of a strategy of corporate defense lawyers, approaching and generously supporting the scientist-authors, most of whom had previously published little or nothing on asbestos. These

publications were created to provide evidence that mechanics' asbestos exposures do not cause asbestos diseases. They were to be published by the best scientists money could buy.

Current Sale in United States of New Asbestos-Containing Vehicles and Brake Replacement Parts

After receiving Henshaw's threatening calls last August, OSHA officials contacted major auto makers asking whether they still sold any new vehicles with asbestos brakes. They were told by General Motors and Ford that these firms were still selling some new vehicles with asbestos brakes in the United States. This contradicted the reported findings of a telephone survey that EPA had done in 2004, which EPA reported as follows: "All nine companies responded that they no longer sold asbestos brakes in new vehicles or as replacement parts in the United States." The companies accounted for 96 percent of light vehicle sales in the United States (GM, Ford, DaimlerChrysler, Toyota, Nissan, VW, BMW, Honda, Hyundai). <http://www.epa.gov/fedrgstr/EPA-TOX/2006/August/Day-24/t14057.htm>

EPA was recently informed that replacement brakes bought in 2006 for a Chrysler vehicle were shown by lab testing to contain asbestos. So it appears that some of the major auto makers are still selling asbestos-containing new vehicles and replacement brakes in the United States, even though they probably wouldn't dare try to sell that stuff in European Union countries like Germany, Poland, Slovenia, and Lithuania.

We thus have the very disturbing confirmation that new vehicles and replacement parts with asbestos continue to be sold in the United States. About \$103 million worth of brake parts are imported annually from countries that mine asbestos and manufacture asbestos products (this includes Canada, India, and Peru). China is fast overtaking Brazil as the leading country of origin of these automotive friction materials. There is no official scrutiny to determine whether the required OSHA cancer warning labels are on asbestos brake products from these countries. There is no information about the working conditions or pollution at the plants where these products are made. There is no information about the business relationships that such manufacturers have with the major auto makers.

Fly-by-night distributors have a virtual invitation to ship asbestos brake and clutch parts to the United States and not even place warning labels on them. OSHA seems content to post a factsheet on its Website but does not make the effort to go out and warn mechanics or provide credible enforcement of its standard to protect them. Meanwhile, most mechanics think asbestos is banned in the United States and take few precautions.

When I first began investigating the victimization of workers in backward countries by companies exporting discredited, hazardous technology, I never imagined I would ever see the United States treated as such a dumping ground by U.S.-based and foreign corporations.

EPA has the power to summon information on the U.S. sale of asbestos-containing automotive friction materials and gaskets as replacement parts; EPA can also compel the auto makers to disclose the new vehicle models with asbestos-containing friction materials and gaskets sold in the United States in 2006 and this year. This authority exists under Section 8a of the Toxic Substances Control Act, and it should be put to immediate use.

EPA

The EPA "Gold Book" was written in 1986 after full review by EPA, OSHA, NIOSH, and others, titled *Guidance for Prevention Asbestos Disease Among Auto Mechanics*. This 16-page pamphlet with the gold cover was uncontroversial at the time it was published. It warned that mechanics grinding asbestos-containing brake and clutch parts urgently needed to have dust controls on the grinding wheels. Compressed air blow-out of brake drums, which would be forbidden by an OSHA standard issued the same month the EPA pamphlet came out, was advised against, unless it could be done inside a transparent glove-box enclosure designed to draw away the dusty air to a high-efficiency air filter. Significant exposures were otherwise going to occur and place people at risk of dying from asbestosis and cancer, warned the Gold Book. It was distributed to all of the vocational and technical schools in the country, in an exemplary government public health information effort.

EPA published the Gold Book 11 years after NIOSH had put out a national alert on the hazards of asbestos to mechanics. Even the industry trade association, the Friction Materials Standards Institute, accepted that mechanics could get cancer from the dust and needed to employ dust controls and respirators, in a work practices guide published in 1978. But a quarter century later, new doubts were raised about whether mechanics' asbestos exposure caused asbestos disease. By 2003, there

were still copies of the Gold Book available from EPA, but they were just gathering dust on the shelves.

Suddenly receiving much more attention in the courts than in the 1990s, brake manufacturers sought some official recognition of the “controversy” they had attempted to create by sponsoring a flurry of articles re-analyzing the earlier literature. As luck would have it, business interests had slipped a rider into an appropriations bill in 2001, later anointed the “Data Quality Act.” So, in August of 2003, one of the big corporate defense law firms, Morgan Lewis and Bockius, moved to have EPA withdraw the Gold Book as based on out-of-date science and government regulations. The lawyers refused to disclose whom they represented to Members of Congress and the media. But an article in *Corporate Counsel*, “Who Represents America’s Biggest Companies,” credited major services by Morgan Lewis to Honeywell. GM was another client of the vast law firm. (Last year, I met the lawyer who signed the Morgan Lewis letter to EPA, representing another defendant at my deposition in an asbestos case, and I showed him where I had named him in the latest edition of my book on the public health history of asbestos. He just asked me how I knew about General Motors.)

Four Exponent bills to General Motors, Ford, and DaimlerChrysler under the heading, “Technical Support—Asbestos Litigation” contained charges for the line item, “Prepare Materials to Challenge 1986 EPA” in the last half of 2003. This is science for sale in the service of business interests willing to endanger another generation of mechanics. The Gold Book wasn’t crucial in proving that mechanics were endangered by asbestos. But the official withdrawal of the Gold Book by EPA would have provided the basis for national publicity and motions to dismiss damage suits in courts across the country, while providing a new defense in cases that went to trial.

Fortunately, people in EPA got the word out about this attack on the Gold Book, and scientists sent comments in to EPA providing evidence that brake asbestos exposures still did cause asbestos diseases. EPA responded in November 2003 that a revised draft version of the Gold Book would be presented for public comment in spring of 2004. I called EPA as time wore on, and in 2005 was told that EPA was not going to revise the Gold Book after all, they would defer to OSHA, where a factsheet was being prepared about the brake mechanic section of the OSHA asbestos standard. That’s how I heard about the OSHA factsheet, which had been started in 2000 and was undergoing considerable delays of its own by 2005. And on July 21, 2005, the Office of Management and Budget held the first of 3 or 4 conferences with EPA and OSHA about what if anything to tell the public about asbestos hazards from brake work. On May 3, 2006, journalist Andrew Schneider reported (“Asbestos Concerns Resurface/ Brake imports using fibers surge, imperiling mechanics,” *Baltimore Sun*) that OSHA was *not* going to publish the factsheet, but EPA was going to revise the Gold Book after all.

Senator Murray placed a hold on the nomination of Stephen McMillin as OMB Deputy Director, and OSHA got the factsheet out on July 26, 2006. The next month, EPA put out a proposed revision of its brake warning document for public comment. The revised document is expected to be issued in March or April of 2007. I salute the dedicated civil servants at EPA and OSHA for persisting against great pressures to produce relatively good materials up to this point. But how many people were consigned to get cancer some future day, because the Federal agencies delayed for several years, playing ping-pong with their responsibility to protect workers and the public?

On May 4, 2006, Representatives David Wu and Major Owens asked the GAO to investigate the EPA’s delays and OMB’s role in handling the Gold Book revision. This investigation was delayed by lack of cooperation by EPA, and at the end of 2006 the GAO investigation was expanded to also examine OSHA’s handling of the factsheet on brake asbestos hazards. I hope that OSHA cooperates with GAO. But OSHA’s response (Dec. 14, 2006) to an inquiry by House Committee on Education and the Workforce Chairman George Miller was absolutely insulting; Henshaw’s successor, Edwin Foulke, Jr., brazenly withheld documents from Congress “because of the strong and long-recognized executive branch interest in protecting the integrity of the deliberative process.” It’s pretty obvious that the integrity of the process would be better served by sunlight and oversight, not stonewalling.

Contaminant Asbestos

Aside from the recognized products using commercial asbestos as an ingredient, there are products that use other minerals that naturally occur with asbestos contamination in them. These include the notorious vermiculite mined for decades in Libby, Montana by W.R. Grace and talc mined in northern New York State. By the time the Libby operation was closed in 1990, asbestos-contaminated attic insulation

had been installed in millions of homes in the United States and Canada. The Canadian government is considering what to do in the face of news reports about Raven Thundersky and several of her family members, who have been stricken with mesothelioma from living in such a dwelling.

The talc mines in New York have been notorious for occupational lung diseases since the early 1940s, at which time it was realized that asbestos fibers occur naturally in these deposits of talc and in many other talc mining areas. This talc is mined by R.T. Vanderbilt Company. For over 30 years, Vanderbilt has denied that there is asbestos in its talc, making mineralogical arguments to distinguish the contents of its talc from the definitions of asbestos in government regulations.

When asbestos was banned in consumer patching compounds in 1977, Bondex International reformulated a spackling compound after being told by Dr. Selikoff's laboratory that there was asbestos in the product from the talc they had used, which was Vanderbilt talc. So I was amazed to learn last year that a widely used product, Durham's Water Putty, contained asbestos because it is still made using Vanderbilt talc. I learned about this because I was an expert witness in three cases where workers who had used this product and developed mesothelioma were suing Durham Company and R.T. Vanderbilt. Along with other experts in the case, a pathologist and a microscopist who had analyzed the Durham product, I drafted and hand-delivered a letter Jan. 29, 2007, to the Consumer Product Safety Commission.

We asked the CPSC to enforce its ban on asbestos in consumer patching compounds by taking action against Durham, Vanderbilt, and Ace Hardware (whose retail outlets sell the product all over the country). We also told CPSC about the long history of denial by Vanderbilt that its talc contains fibers that cause asbestos disease, and we asked CPSC to find out what other products Vanderbilt talc is used in. My co-petitioner, pathologist Jerrold Abraham of Syracuse, has seen cases of asbestosis, mesothelioma, and lung cancer in individuals whose only exposure to asbestos came from the New York State talc mines. He and other doctors have published a report in the literature of 5 cases of mesothelioma in New York State talc miners in addition to 8 cases identified in previous studies as having mesothelioma.

This is an example of how contaminant asbestos can endanger large numbers of people's lives in this country. Another source of concern is Virginia Vermiculite, where Mine Safety and Health Administration (MSHA) officials were concerned about asbestos exposure of workers at this site and at plants receiving and processing this material. Vermiculite has been used in such products as potting soil, insulation, and cat litter. <http://seattlepi.nwsource.com/uncivillaction/asb04.shtml>

MSHA hearings on asbestos hazards of mining and stone quarrying were held on October 20, 2005, and I brought these concerns up at that time. MSHA action is needed to better protect workers mining talc in New York and vermiculite in Louisa, Virginia.

This danger can extend to basic stone used in construction. In 2005, research was published linking residence in areas of California with naturally occurring asbestos outcrops and increased risk of mesothelioma (Pan et al., Am. J. Resp. Crit. Care Med. Oct. 2005). Dr. Marc Schenker, one author of this study, expressed concern about the health hazard faced by people with environmental exposure in areas where development was proceeding in El Dorado County, California, and other areas where asbestos minerals are known to be present in the soil in significant amounts. <http://www.medicalnewstoday.com/medicalnews.php?newsid=32149>

In El Dorado County, California, there is a considerable amount of land development and construction, and soils have been found to contain up to several percent of tremolite asbestos. Pathologists Jerrold Abraham and Bruce Case have separately determined asbestos fiber burdens in lung tissues of deceased pets from the area. Lung tissue burdens of tremolite and actinolite asbestos increased with the number of years the animals had lived in the area. No such fibers were found in the lungs of a cat that had not lived in the area. The fiber burden in the pets' lungs was higher than found in the lungs of goats in an area of Corsica, where environmental exposure to tremolite asbestos is clearly associated with human mesothelioma occurrence. <http://www.upstate.edu/pathenvi/NOTES%20VIEW%20FINAL.pdf>

Testing conducted by the EPA showed that children and adults participating in sports activities in areas where asbestos occurs naturally in surface soils are exposed to asbestos fibers at up to 62 times the reference levels. EPA Region 9 has worked with State and local authorities in California to map, monitor, control, and regulate exposures from naturally occurring asbestos.

What is needed is a process whereby the EPA does surveillance of possible sources of contaminant asbestos around the country, starting with Vanderbilt talc and Virginia Vermiculite, using USGS mineral survey maps to help identify hot spots. Then, as operations of concern are discovered, there needs to be a process of investigation, first for EPA to realistically sample the products of these operations and

do bulk sample analysis. Then, if there is any concern over public and worker exposure, the company should have to disclose its commercial customer list to EPA. EPA could then contact the customers to see how the material is handled, ask what products it is used to make, and assess what asbestos exposures result for workers, consumers, and people living where the stuff is shipped, processed, and put to end use. In annual reports, EPA should disclose what operations it has under investigation, and summarize the state of these investigations, describing the commercial uses of the suspect materials. And of course, the EPA needs the authority to close operations and stop the sale of products that are deemed a threat to public health.

Conclusion: Ban Asbestos

The problem of asbestos in automotive friction materials well illustrates the need to ban asbestos in this country. While traditional public health information and regulation can reach some people, there will be many more who never see an OSHA Website or inspector or receive guidance from the EPA. There are hundreds of thousands who do regular brake and clutch repairs in their jobs, and another 2,000,000 brake jobs are done each year by people working on their own vehicles. Similarly, the importation of asbestos-cement building panels from Mexico is a serious and unnecessary hazard to construction workers and the general public. There is simply no reason to tolerate the import of asbestos products that are not even manufactured in this country.

Modern industry has no need of asbestos. Global corporations (Dow, ICI, Unilever) have worldwide codes of practice for avoiding the use of asbestos-containing materials in new construction and treating them with great care in existing infrastructure. The auto makers serve major markets in Europe and elsewhere, without using asbestos in new cars and trucks or replacement parts. There are no multinational asbestos corporations left in the world.

What remains of the asbestos industry are separate national companies, owned by the bottom dwellers of the corporate food chain. These companies' profitability is based on minimizing the costs of prevention and compensation, primarily selling asbestos-cement construction materials. The asbestos industry is a quasi-criminal industry in much of the world today, using its power to corrupt political processes and control the media when challenged. The asbestos industry is still expanding in such countries as India and China, they're still building new asbestos factories over there. And the local Lords of Asbestos smile and point to the United States if anyone talks about banning asbestos, saying it's still legal over here.

But this isn't India, we don't have an asbestos industry in the United States. The asbestos trade group vanished from K Street long ago. The U.S. Government has taken a stand in support of national asbestos bans. When asbestos exporter Canada challenged the French asbestos ban at the World Trade Organization in 1999–2001, the United States supported France's (successful) defense. U.S. asbestos consumption is down to 2,000 tons per year, from 800,000 in 1973. There are no more operating asbestos mines in the United States. The economic impact of banning asbestos and asbestos products in the United States would be trivial. And if Congress doesn't allow for a protracted rulemaking process, we should be able to match South Korea by having a total asbestos product ban in effect by the end of next year.

I urge that the legislation require EPA to issue proposals within 6 months to set criteria to establish what products contain asbestos (the "ban rule") and then promptly hold hearings to consider exemptions applied for by business interests. EPA should be directed to consider in exemption applications the availability of safer, asbestos-free alternative products and processes, and the potential health impacts on workers, consumers, and the general public. The ban should take effect starting 1 year after enactment for all commercial uses of asbestos for which substantive requests for exemption have not been made. The EPA "ban rule" should also be issued within 1 year after enactment, defining the criteria for establishing whether products are covered by the ban. Other agencies, such as NIOSH, may be able to help on this. EPA should complete evaluation of all applications for exemption within 1 year after holding hearings after publishing the proposed "ban rule." Exemptions should lapse if not renewed 3 years later. This should be relatively straightforward for products made with commercial asbestos, less so for products and processes involving contaminant-asbestos.

The widespread distribution of asbestos-contaminated talc and vermiculite in consumer products urgently needs to be investigated and regulated. Public and worker asbestos exposure is most insidious when it is concealed, and there should be criminal penalties for selling such products while concealing that they have asbestos in them. The Ban Asbestos statute should cover contaminant-asbestos articles in commerce and provide EPA with the means to fully investigate and regulate all such public health hazards. The EPA ban rule should define what is meant by an asbes-

tos product, for products including those containing contaminant-asbestos, including methods of analysis as well as other considerations for conducting evaluations (e.g., have people developed asbestos disease from exposure to it, has it shown this potential in experimental animal studies, how similar is it to materials about which such data exist, are studies to resolve such questions presently being conducted by independent researchers).

To the extent that there are more complex issues involved with contaminant-asbestos, the resolution of these should not be structured in a way that will delay the less controversial banning of products made with commercial asbestos as an ingredient.

Banning asbestos in the United States would have an important effect on the rest of the world. Today, most people in the world still live in countries where there is still a lot of asbestos consumed—we will also help them by our example, I assure you, even as we help the people of our own country.

I have not been paid by anyone for my preparation and testimony here today. Nor do I represent anyone today but myself, a public health worker. Thank you for inviting me to speak.

The CHAIRMAN. We do have all of your prepared statements, thank you.

Dr. Wilson, we'll turn to you.

STATEMENT OF RICHARD WILSON, D.Phil., PROFESSOR OF PHYSICS, HARVARD UNIVERSITY, BOSTON, MA

Mr. WILSON. Madame Chairman and members of the committee and ladies and gentlemen, about 1972 I first began careful comparative studies of various risks, both occupational and environmental. I've written many papers on this and comprehensive approaches in my book with benefit analysis is here and I've got some copies for the members of the committee.

I was immediately concerned about asbestos. I was appalled that the industry and U.S. Government position that the threshold exists or at least, according to the Consumer Product Safety Commission, it was a nonlinear dose response relationship. I was therefore delighted when Professor Julian Peto of the United Kingdom, following his brother, Sir Richard Peto's advice to the EPA, challenged this at the meeting of the New York Academy of Sciences in 1978 and since then, everybody has assumed that no threshold exists and I believe correct.

I was also challenged—the measurements of best form or asbestos concentrations in the environment because often, they are measured in calm periods of wind when actually the uptake of asbestos will be as good as cube of the wind velocity.

I note that in my personal experience, my father died of lung cancer caused by cigarette smoking. My grandmother died of lung cancer caused by the air pollution in Halifax, United Kingdom. You probably know the prayer Hell, Hull, and Halifax, Good Lord Deliver Us. One of my wife's relations was an executive of Johns Mansville, who died of asbestos lung cancer. So I'm well aware of those issues.

In the 1980s, everyone became more cautious. Occupational limits were reduced over a hundred fold and several hundred fold less than the exposures of which gave the enormous numbers of cancers of which there is the epidemiology.

The proposal is to ban asbestos in the United States, which might have been sensible in 1979 but now it's been—although it's been banned in about 50 countries around the world, not in the U.S.A.

We argue the time for an absolute ban is past. We have used more sophisticated regulatory tools with much success. In 1971, asbestos consumption was 500,000 tons per year and permissible exposures were 100 times what they are now. Now that the sums are 250,000 tons less and exposure limit 100 fold less—we certainly will have far fewer cancers.

Now, so we don't have the time of the bad old days. In the late 1970s, in my belief and early 1980s, Federal organizations went overboard. In 1978, an incorrect report predicted asbestos related cancers caused over 70,000 cancers a year in the United States. That was discredited within a couple of weeks by the Buenos Aires Conference, by the world epidemiologists.

The prediction by various Federal agencies over the years of the numbers who will develop cancer has continually lowered. The proposed number of 10,000—I believe that is high. I think the number is between 1,700 and 4,000 and moreover, since the exposure limits have been reduced, all of those are due to past exposures from the bad old days and almost none since exposure since 1980.

So in 1979, there was a proposal for an absolute ban on asbestos, which didn't actually come—put forward by the EPA until 1989. Now, in 1991 we've heard, the Court of Appeals overturned it and said the agency had failed to supply substantial evidence to support the rule and the Chairman of the EPA to provide it. They haven't and we believe it doesn't exist for chrysotile asbestos.

If the EPA had initiated a ban, for example, on asbestos shingles, it would cost 25 million dollars and save 0.32 statistical lives, about 100 million dollars for a statistical life. This high cost is in contrast with the uncontested EPA rule of 2000, suggesting that statistical lives of this sort—just calculated, you understand—would be regulated if they exceed—if they are less 5.6 million dollars per life. So according to the EPA's present rule, they would not be applying to all cancers that would not be regulated, an uncontested rule, by the way.

The Court remanded the matter back to EPA and it's important to realize the Court of Appeal's procedure. It is an important part of our democracy and we believe exists nowhere else in the world and if you object to the Court of Appeal's procedure, do exactly what the EPA—what they suggested, go back and provide the substantial evidence.

In the intervening years, there has been controlled use of asbestos in many parts of the world and the dangerous amosite and chrysotile asbestos has left commerce worldwide—no one uses it, ever. That started its decline in the 1960s and the U.S. incidence of mesothelioma declined since the 1990s. Remember, mesothelioma has a 40-plus years of latency period. So any mesothelioma now is exposure from at least 40 years ago.

This decline is consistent with the idea that mesothelioma is caused by the past exposures and also by the time we had dangerous amphibole elements and there is no evidence mesothelioma is caused by chrysotile to any appreciable extent.

Less than 17 percent of the countries around the world have chosen to ban asbestos and many of their bans are not absolute. But we've heard we can do something about that, of course.

I point out asbestos is not a manufactured material although mining and manufacturing processes are used to make it useful. But a ban on these processes will not address the real risk caused by asbestos outcroppings in many parts of the country with a much greater risk right now.

For example, asbestos exposures in Libby, Montana was from dangerous amphibole asbestos, not from the much safer chrysotile asbestos. And EPA is currently reviewing its posture on this and they haven't yet done a proper risk assessment.

The Ban Asbestos bill calls for banning materials of asbestos, which contains asbestos in any concentration. A fundamental principle, I'm against such—zero and absolute bans. I think if we don't have any knowledge, they may be appropriate. They may have been appropriate in the 1970s but they are not, in my view, appropriate now. They are obsolete and not appropriate to a developed society.

Modern methods can identify very low concentrations of minerals all over and they can be coped with and controlled.

The CHAIRMAN. Dr. Wilson, if you could summarize real quickly, we want to make sure everybody has a chance to speak.

Mr. WILSON. Now the commercial asbestos minerals have been moved from commerce—and the asbestos consumption has been reduced by 250 times and it is chrysotile only and the exposure levels of the workplace have been controlled 100 times better than there were in the 1970s. I think there is no particular use. Complete banning of asbestos—gaskets, o-rings, diaphragms, roof coatings and such, would be still useful and they could be controlled and there is no reason not to do it.

[The prepared statement of Mr. Wilson follows:]

PREPARED STATEMENT OF RICHARD WILSON, D.PHIL.

These comments are submitted in order to summarize and in some places expand on the letter of February 13th submitted by Dr. Robert P. Nolan and myself.

Mme. Chairman, Senators, ladies and gentlemen, about 1972 I began careful comparative studies of various risks, both occupational and environmental. I have written many papers on this and a comprehensive approach to the subject is in my book "Risk Benefit Analysis," copies of which I have here. I was immediately appalled at the situation about asbestos. It worried me that the industry position was that a threshold exists, and the U.S. Government, Consumer Product Safety Commission, assumed there is a non-linear dose response relationship. There are fundamental theoretical reasons, enunciated in 1976 by Sir Richard Peto and others, (Crump *et al.* 1976) that a linear dose response should be the default for almost all carcinogens, depending only on the fact that most of these agents (chemical, radiation, or otherwise) cause cancers, or other medical outcome, indistinguishable from those occurring naturally. Then Taylor's theorem in mathematics applies. I was therefore delighted when his brother Julian Peto of the UK challenged the threshold concept for asbestos at a meeting of the New York Academy of Sciences in 1978. I was also concerned that measurements of airborne asbestos concentrations were often taken in a calm period, whereas the uptake from surface concentrations will rise as the cube of the wind velocity. I was also delighted by the action of Sir Richard Doll of the UK, who in response to Julian Peto's criticism asked Julian to join him in an important report to the UK government in the early 1980s which influenced much of the ensuing policy.

I emphasize that I yield to no one in concern for the victims of the high exposures of the "Bad Old Days." My father died in 1986 of lung cancer. Sir Richard Doll and I went over the numbers carefully and agreed that it was due to cigarette smoking—although he had stopped 41 years before. My grandmother died of lung cancer also—caused I believe in her case by air pollution in the town of Halifax in UK. Some of you will remember the old non-conformist prayer: "From Hell, Hull, and

Halifax, Good Lord Deliver Us.” One of my wife’s cousins, an executive at Johns Manville, died of lung cancer—caused no doubt by high asbestos exposures.

In the 1980s everyone became more cautious. The occupational exposure limits were reduced a hundred fold and asbestos was removed from hundreds of locations. There were proposals in the United States to ban the use of asbestos entirely which might have been justifiable in the ignorance of 1975. Asbestos has been banned in over 40 countries around the world, but not in the U.S.A. We argue that the time for an absolute asbestos ban has passed. We have used more sophisticated regulatory tools with much success. In 1971 all the commercial asbestos fiber-types were being used in the United States, asbestos consumption was above 500,000 tons per year and the permissible asbestos exposure level was 12 fibers/ml (equal to or greater than 5 microns in length) an asbestos ban may have been justifiable as the simplest solution to a huge problem. Since the U.S. Occupational Safety and Health Administration began to regulate asbestos in 1971, we would like to point out the events that have occurred to eliminate any need for an asbestos ban in the United States.

The permissible occupational exposure limit has been reduced to 0.1 fibers/ml over a hundred fold lower than the 1971 asbestos standard and hundreds of times lower than the historical high asbestos exposure levels of the “bad old days” associated with asbestos-related disease. The current U.S. permissible exposure level for asbestos is as low as any in the world. We strongly disagree with statements in the Ban Asbestos Bill indicating the current U.S. permissible exposure level is not safe.

In the late 1970s Federal organizations who had been insufficiently cautious before went overboard. The predictions by various Federal agencies over the years about the number of Americans who would develop asbestos-related cancers have been consistently lowered. In 1978 Mr. Joseph Califano released a report from the National Cancer Institute and the National Institute of Environmental Health Sciences (completely discredited within a couple of weeks by epidemiologists at a conference in Buenos Aires, although the Council of Environmental Quality still referred to it 18 months later) suggesting that occupational exposures, were the major cause of cancer with asbestos causing 17 percent. They predicted that 2 million premature asbestos-related cancer deaths would occur over the next 30 years—70,000 per year. The false assumption was made that any worker exposed to asbestos—even to a small extent—had the same cancer risk as the highest exposed asbestos worker. They also forgot to say that these would almost all be from past exposures (Efron 1984, Wilson and Crouch 2001).

From the 70,000 asbestos-related cancers predicted annually from 1978 to 2008 the proposed legislation reports “that as many as 10,000 American citizens will die each year from mesothelioma and other asbestos-related diseases.” This, we believe, is high. Before the asbestos use there were 400 mesotheliomas a year among men and a comparable number among women. The number went up and peaked at 2,000 in men in the year 1990, and is now falling. These are almost certainly due to the high exposures starting in the 1940s till the drop in amphibole asbestos that began in 1980. Since there is a long latency period, often 40+ years for mesothelioma, this makes sense. This makes a total of about 1,700 asbestos related mesotheliomas, falling slowly to zero in about the year 2030 or 2040. Lung cancer has a shorter latency period, and has many other causes, so it is unsure whether there are still many lung cancers caused by past exposures. Perhaps a maximum of 1,000 per year, making a total of 1,700–3,000 cancers per year.

The move to ban all forms of asbestos is not new. In 1979 there was a move for an absolute ban on asbestos. An advanced notice of proposed rulemaking by the U.S. Environmental Protection Agency appeared on October 17, 1979. That year the total U.S. consumption of asbestos was 560,000 tons compared to 2,000 tons now. Moreover about 6.6 percent was the very toxic amosite asbestos and crocidolite asbestos. The balance was the less toxic chrysotile asbestos. The final rule prohibiting most asbestos containing products because it “constituted an unreasonable risk to health and the environment” did not appear until 1989 by which time the amphibole asbestos minerals were leaving commerce. And exposure limits were much reduced.

On October 18, 1991 the 5th Circuit Court of Appeal vacated EPA’s proposed ban because the agency had “failed to muster substantial evidence” to support the rule. In 1986 the EPA estimated that a ban on asbestos shingles would “cost \$23–34 million to save 0.32 statistic lives (\$72–106 million per life).” I note that in about the year 2000 EPA instituted (uncontested) a rule suggesting regulation if the cost is less than \$5.6 million per statistical life. The 5th Circuit went on to query why EPA would consider asbestos so dangerous if for example “. . . over the next 13 years, we can expect more than a dozen deaths from ingested *toothpicks*—a death toll more than twice what the EPA predicts will flow from the quarter billion-dollar bans on asbestos pipe, shingles and roof coatings.”

The Court of Appeal's decision remanded the matter back to EPA to muster further evidence to support their claim that asbestos exposure constitutes an "unreasonable risk." Such additional evidence has never been provided by EPA and we would argue that for chrysotile asbestos it does not exist. The Ban Asbestos Bill has not addressed any of the Court of Appeal's concerns about mustering substantial evidence. In the intervening time it has been shown that controlled use of chrysotile asbestos is feasible and it is happening in many parts of the world (Nolan et al. 2001). The "substantial evidence" the 5th Circuit asked for to show that controlled asbestos exposure presents an "unreasonable risk" is not available and we argue that such evidence does not exist (Wilson et al. 2001).

Has anything changed to justify the U.S. Senate's bill to ban asbestos now?

As we re-visit the ban issue 28 years after the first proposal and 16 years after the Court shot it down, much has happened to make a complete ban of asbestos in the United States an even less sensible public health policy. One involves the definition of asbestos. The original etymology of the word is from the Greek. It does not burn. That was, of course the most important first use of commercial asbestos. One cannot have a simple chemical definition, because the same chemical appears in two distinct forms. One "asbestiform" has a thin fibrous structure and another a bulk form. There are also cleavage fragments that have not been regulated as asbestos and are almost certainly less toxic. It is generally agreed that only the first—asbestiform—are legitimately called "asbestos" and it is the form that is extremely toxic and that has been regulated. There is more controversy about whether to treat all the forms common in 1970 as having the same toxicity because we could not at the time prove that they were different or to consider them differently because they could not be proved to be the same! Regulators chose the former, but in the intervening time an increasing number of scientists believe that chrysotile is less likely to cause lung cancer than the amphibole asbestos minerals (amosite and crocidolite). For example a quantitative risk assessment by Hodgson and Darnton of the UK Health and Safety Executive appeared in 2000 found a difference of over a factor of 5, although I personally have problems with their modeling because they have a non linear dose response for one of them.

There is even more agreement that chrysotile is much less likely to cause mesothelioma—if indeed it causes it at all. Julian Peto's work on mesothelioma among a cohort in Lancashire UK, exposed to pure chrysotile found none that could be attributed to the chrysotile, and put an upper limit on the potency one fifth of that caused by amphiboles. The most recent estimate based on modeling by Yarborough in 2006 which I do not necessarily support, is that the difference in potency between crocidolite asbestos and chrysotile asbestos for mesothelioma is 500 to 1. Yarborough concluded that the "risk of chrysotile for mesothelioma in most regulatory context reflects public policies, not the application of the scientific method as applied to epidemiology studies." Yarborough clearly would not support the claim in the Ban Asbestos bill that the current asbestos permissible exposure limit does not protect workers. Crocidolite asbestos and high exposure to amosite asbestos are probably the major etiological agents in this disease.

I am concerned about the definitions of asbestos used in the Ban Asbestos bill. They are not specific enough and could be interpreted to include other "non-asbestiform" materials mentioned above. For example acicular is not a characteristic unique to asbestiform materials. Non-asbestos amphibole fibers can be described as acicular and are not regulated as asbestos by the U.S. Occupational Safety and Health Administration (OSHA). Three minerals are included in the ban which have never been regulated as asbestos—richterite, winchite and erionite. Fibrous erionite, which has been found in natural outcroppings in Turkey and used by the local villagers for a variety of purposes which involved high exposure has designated by the International Agency for Research on Cancer as a human carcinogen (Group 1) but there has never been an erionite related mesothelioma reported in the United States. The two other "durable fibers" mentioned are richterite and winchite which have been described in the vermiculite deposit at Libby, Montana. Neither of these two fiber-types has ever been regulated as asbestos by OSHA. The predominant fiber in Libby is tremolite asbestos. I and others recommend that "asbestiform" be added to the description of both these minerals to increase the precision and that the word acicular be deleted as a characteristic of asbestos. Only then could the definitions in Ban Asbestos bill be adequate for regulatory purposes.

Consumption of these two amphibole asbestos fiber-types, amosite and crocidolite, started to decline in the 1960s and the U.S. incidence of mesothelioma has been declining since the 1990s (Weill et al. 2004). This updates earlier reports including one by Price and myself (Price and Wilson 2001). This decline is consistent with the idea that the mesotheliomas are caused by past (40 years and more) exposure to these

dangerous amphibole asbestos minerals. It is also consistent with the idea, also suggested by epidemiology, that chrysotile asbestos is not known to cause mesothelioma.

U.S. consumption of asbestos has fallen to 2,000 tons of chrysotile asbestos in 2006 which is about ¼ percent of the consumption in the mid-1970s. Exposures are much better controlled. Ninety percent of the chrysotile asbestos is used in asphalt roofing products which are not regulated by the U.S. Occupational Safety and Health Administration as an asbestos-containing product because there is no evidence of asbestos release from this matrix.

Less than 17 percent of the countries around the world have chosen to ban asbestos (most after the EPA ban was vacated in 1991) but worldwide consumption has remained in excess of 2,000,000 tons per annum. Most of the asbestos bans were not total but were to ban certain uses of asbestos while other critical uses such as gaskets to contain corrosive gases in rocket engines and diaphragms for production of chlorine, are allowed. The U.S. Court of Appeal review is unique in that the openness of the U.S. Judicial process allowed for an impartial review of a government led asbestos ban. To our knowledge the issues raised by the 5th Circuit have never been addressed in any country where asbestos has been banned.

Asbestos is not a manufactured material although mining and manufacturing processes are used to make it useful. A ban on these processes will not address the risks caused by asbestos outcropping in many areas of the country. These natural risks are orders of magnitude greater than the residual risks of processed asbestos. For example the asbestos exposures in Libby, Montana are to dangerous amphibole asbestos. There has been no risk and toxicity assessment for these to determine the safe human exposure, although it is reported that the EPA is making one. The remediation measures in Libby taken to date are not based on a health standard.

The Ban Asbestos bill calls for banning minerals or products which contain asbestos "in any concentration." This search for zero is an old fashioned and obsolete procedure. It may be appropriate when one has no knowledge, as in primitive societies, or our society in 1975. Modern analytical methods can identify very low concentrations of mineral fiber present in ore deposits, or even in the general urban environment, which may or may not be asbestos. Modern analytical methods and modeling are capable of reliable predictions—particularly of upper limits to risk. Nor should we insist on zero risk—which is theoretically not achievable and the search for which is usually counterproductive. Now that the use has been much reduced, and exposures curtailed even more, we can demonstrate that there is a "negligible risk," a procedure now used in other hazardous situations. The Ban Asbestos bill as written may cause the presence of asbestos at low concentrations to be claimed where it is not present (Langer *et al.* 1991).

The U.S. asbestos policy proposed in this draft bill, is not based on a modern understanding of the cancer risk from various asbestos fiber-types. Another consequence of this is that after the expenditure of \$100 million in Libby, Montana the evidence of a benefit remains elusive as stated by the EPA Inspector General in his December, 2006 report.

Now that the commercial amphibole asbestos have been removed from commerce by economic forces and the asbestos consumption in the United States has been reduced 250 times and is consumption only of chrysotile asbestos, and the exposure levels in the workplace reduced by many hundred fold, it can be demonstrated that there is a "negligible risk" in the sense now being used for many other hazardous situations. There is therefore no justification for banning the controlled use of chrysotile asbestos. The use of asbestos in gaskets, O rings and the like pose negligible risk to anyone and to curtail them without reason is counterproductive to the economy and well being of the United States as a whole.

Of course, as well as reducing the exposures, which we have done, society must treat the victims of the past high exposures and learn what one can from their suffering. In this testimony I do not address any details of this necessity.

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The CHAIRMAN. Thank you very much, Dr. Wilson.
Sue Vento.

**STATEMENT OF MRS. SUSAN VENTO, WIDOW OF
REPRESENTATIVE BRUCE VENTO, ST. PAUL, MINNESOTA**

Mrs. VENTO. Good morning. Consider the irony, if you will, of a hardworking science teacher who went on to become a leading national advocate for workers and for the environment, dying suddenly from work-related exposure to a natural substance found in our environment. Consider if you will, the possibility to reduce such life-threatening exposure and to increase medical knowledge and the possibility of prolonging lives.

He grew up in a large, Italian and German family on St. Paul's East Side, the second oldest of eight children. He learned the importance of hard work at an early age from his parents and from delivering newspapers and bussing tables in a hotel restaurant. He worked at factories and a brewery in order to pay his college tuition to become a science teacher.

Bruce would want me to note that the brewery was his favorite job because he had really good breaks there.

[Laughter.]

At 30, he was elected to the Minnesota House of Representatives and 6 years later, he was elected to his first of 12 terms in the U.S. House, where he served on the Natural Resources and Banking Committees. He was Bruce Vento. He was my husband and my best friend.

In mid-January 2000, Bruce was on a Congressional trip. Early in the trip, he mentioned in one of our evening phone calls that he wasn't feeling well. He noted a shortness of breath and some back pain.

Immediately upon returning, he went to the House Physician and was then taken out to Bethesda Naval Hospital. The following day, Bruce was told he had lung cancer. He flew home that evening and we spent the weekend talking about how best to proceed. He decided he wanted to see specialists at the Mayo Clinic. There, we were introduced to the term, mesothelioma. Arrangements were made for further testing. On the morning of January 29th, Bruce

was told that he did not have lung cancer but instead he was diagnosed with pleural mesothelioma.

The diagnosis was puzzling. Bruce racked his brain to determine where and how he could have been exposed to asbestos. He later recalled those jobs at the factories and the brewery during the early 1960s. His exposure to asbestos was no more significant than that which so many Americans have experienced in their work and home settings.

On Valentine's Day, surgeons removed Bruce's right lung, the lining of the lung and half of his diaphragm. At the end of March, he began chemotherapy followed by 6 weeks of radiation therapy. Physicians, nurses, technicians and staff quickly came to understand that Bruce was not their typical patient. With a science background, he was quick to question them in great detail about procedures, medications and side effects. Even when in wrenching pain or when totally exhausted, he'd quiz them before he would let them do anything.

Following the completion of the radiation, we were confident that Bruce was through the worst of it but within a few weeks, we were told that the cancer had spread to Bruce's other lung. On September 25th, we were urged to arrange for hospice care, which we did the next day. On the beautiful autumn morning of October 10th, Bruce died at our home with his family at his side.

Since Bruce's death, I have had the privilege of becoming involved in advocacy organizations that represent mesothelioma patients and their families. Let me tell you about just a few of them that I've met.

Chris, a quiet, hardworking young man, was exposed to asbestos while working as an airline mechanic. He battled mesothelioma bravely for 7 years with his wife, Wendy and their daughter, Taylor, at his side every step of the way. Chris lost that battle this past December 21st. He was 44.

Klaus, a proud man fiercely determined to beat the odds when it comes to mesothelioma. He was exposed to asbestos while working a summer job with a construction crew putting up drywall and while doing several renovation projects. He was diagnosed in 2001. He and his family have explored every possible treatment option. He is currently battling a recurrence and struggling to prolong his life.

Mary, quiet, reflective, a pretty young mom who lives with her husband, Sean and two darling daughters just north of the Twin Cities. She also lives with the reality of a ticking time bomb, mesothelioma, which she was diagnosed with in October 2002. She was exposed to asbestos as a little girl while sitting on her dad's lap as he drank coffee at the end of his workday. He was a construction carpenter. He suffers from asbestosis and the brutal reality of knowing that he brought those fibers home from work on his clothing.

Bev, a vibrant, joyful nurse who provided loving care and endless support for cancer patients and their families, including Bruce and me, during the summer of 2000. Just months after Bruce's death, Bev was diagnosed with mesothelioma. Despite extensive treatment, Bev died in November 2005. Her exposure to asbestos occurred in one of her first work settings, a Minneapolis hospital.

Mary and Bev never worked directly with asbestos and yet it has forever impacted their lives and the lives of their families and friends. Klaus's, Chris's, Bev's, Mary's and Bruce's stories are just a few of the thousands of tragedies that are occurring throughout this country every day.

Senator Murray, your bill will bring hope to all of us whose lives have been touched by this disease. It will prohibit the use of asbestos and will correct the mistaken belief held by so many that asbestos was banned decades ago. It will increase public awareness, which is needed to dispel the myth that only intense and prolonged exposure is hazardous and finally, it will provide desperately needed resources for medical research, life-prolonging early detection and treatment options and ultimately a cure for mesothelioma.

Thank you, Senator Murray. Thank you so much for your years of tireless work on this issue. Thank you to each of you who are here today, Senator Brown and Senator Isakson. We appreciate your hearing our pleas for your support of this important legislation. Please know that your efforts to help secure passage of this bill will be deeply and forever appreciated by mesothelioma patients and their families throughout this country.

[The prepared statement of Mrs. Vento follows:]

PREPARED STATEMENT OF SUSAN VENTO

Consider the irony, if you will, of a hard working science teacher who went on to become a leading national advocate for workers and for the environment dying suddenly from work-related exposure to a natural substance found in the environment.

Consider, if you will, the possibility to reduce such life-threatening exposure and to increase medical knowledge and the possibility of prolonging lives.

He grew up in a large Italian & German family on St. Paul's eastside, the second oldest of 8 children. He learned the importance of hard work at an early age from his parents and from delivering newspapers and bussing tables in a hotel restaurant. He worked at factories and a brewery in order to pay his college tuition to become a science teacher. At 30, he was elected to the MN House of Representatives, and 6 years later, he was elected to his first of 12 terms in the U.S. House, where he served on the Natural Resources and Banking Committees. He was Bruce Vento; he was my best friend and my husband.

There was little that ever slowed down Bruce. He was a very active person—traveling almost every weekend back to Minnesota's 4th Congressional District to meet with constituents and to do his best as their representative in the U.S. House.

Regardless of where he was, he'd typically start each day by swimming, using the nautilus or bicycling on St. Paul's gorgeous trails. In mid-January 2000, Bruce was on a congressional trip. Early in the trip he mentioned in one of our evening phone calls that he wasn't feeling well—he noted a shortness of breath and back pain. Immediately upon returning he went to the House physician and was then taken out to Bethesda Naval Hospital. The following day, Bruce was told he had lung cancer.

He flew home that evening, and we spent the weekend talking about how best to proceed. He decided he wanted to see specialists at the Mayo Clinic in Rochester, MN. At Mayo, we were introduced to the term "mesothelioma." Arrangements were made for further testing. On the morning of January 29th, Bruce was told that he did not have lung cancer, but instead he was diagnosed with pleural mesothelioma.

The diagnosis was puzzling. Bruce wracked his brain to determine where he could have been exposed to asbestos. He later recalled those jobs at the factories and the brewery during the early 1960s. His exposure to asbestos was no more significant than that which so many Americans have experienced in their work and home settings.

On Valentine's Day, surgeons removed Bruce's right lung, the lining of the lung, and half of his diaphragm. At the end of March he began chemotherapy followed by 6 weeks of radiation therapy. Physicians, nurses, technicians and staff quickly came to understand that Bruce was not their typical patient. With his science background, he was quick to question them in detail about procedures, medications, side

effects. Even when in wrenching pain or when totally exhausted, he'd quiz them before he'd let them do anything.

For Bruce's family and friends, but most especially for Bruce, 2000 was a year focused on his well-being and doing everything we could to beat this mysterious disease. The mantra was, "If anyone can beat this, it's Bruce," due to his tireless tenacity and passion.

Following the completion of the radiation, we were confident that Bruce was through the worst of it. But within a few weeks, we were told that the cancer had spread to Bruce's other lung. On September 25th, we were urged to arrange for hospice care, which we did the next day. On the beautiful, autumn morning of October 10, Bruce died at our home with his family at his side.

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Klaus. A proud man, fiercely determined to beat the odds when it comes to mesothelioma. Klaus's quiet determination has made him a role model to so many who have met him. He was exposed to asbestos working a summer job with a construction crew putting up drywall as well as during several renovation projects. He was diagnosed in 2001. He and his family have explored every possible treatment option. He is currently battling a recurrence and struggling to prolong his life.

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Senator Murray's bill will bring hope to all of us whose lives have been touched by this disease:

- It will prohibit the use of asbestos in products in this country and will correct the mistaken belief held by so many that asbestos was banned decades ago.
- It will increase public awareness which is needed to dispel the myth that only intense and prolonged exposure is hazardous.
- Finally, it will provide desperately needed resources for medical research, life prolonging early detection and treatment options, and ultimately a cure.

Thank you, Senator Murray, for your years of tireless work on this issue. Thank you to each of the members of this subcommittee who are here today to hear our pleas for your support of this important legislation. Please know that your efforts to help secure passage of this bill will be deeply and forever appreciated by mesothelioma patients and their families throughout this country.

The CHAIRMAN. Thank you so much, Mrs. Vento.
Dr. Pass.

**STATEMENT OF DR. HARVEY PASS, PROFESSOR OF
CARDIOTHORACIC SURGERY, NEW YORK SCHOOL OF MEDICINE,
NEW YORK, NY**

Dr. PASS. Chairwoman Murray, Ranking Member Isakson, Senator Brown, distinguished members of the U.S. Senate Employment and Workplace Safety Committee, my name is Harvey Pass. I am the Director of the Division of Thoracic Surgery at the New York University School of Medicine in New York. When I was the

Head of Thoracic Oncology at the National Cancer Institute in Bethesda, I was the first to make mesothelioma a research priority and I have continued my mesothelioma clinical and bench work investigations at the Karmanos Cancer Institute in Detroit and now in New York. I'm also a board member and Head of the Scientific Advisory Board for the Mesothelioma Applied Research Foundation and I'm proud that my research in mesothelioma has been funded by the National Cancer Institute, the American Cancer Society and the Veteran's Administration.

Mesothelioma is a diffuse tumor of the lining of the lungs, the abdomen and the heart, which kills close to 3,000 victims in the United States. It relentlessly invades the tissues of the chest and the abdomen, causing excruciating pain in most afflicted patients at the end of their life. The average survival for individuals with mesothelioma is 1 year. The cause of mesothelioma is asbestos. Mesothelioma takes 30 years to exhibit symptoms and roughly between 10 and 50 years from the time of the initial exposure. The mesothelioma victims of today built our country as pipe fitters, boilermakers, insulators, electricians and ship builders, among others and a third of today's mesothelioma victims served as United States people in the Navy, on ships or in shipyards. Families have been destroyed by second-hand fiber exposure when these heroes brought asbestos into the household. It is estimated that there is asbestos in 30 million homes in the United States as well as in numerous products. Exposure to asbestos is unpredictably dangerous. A minimum or a one-time exposure, as you've heard or a very low exposure over time may be enough to trigger the catastrophe leading to mesothelioma.

It is essential that we ban asbestos now and find alternatives to asbestos use. Armed with mountains of evidence about the profound risk of asbestos, it is our responsibility to act by stopping the flow of asbestos into our environment and protect future generations. By finally banning asbestos, Senator Murray's bill will save lives, which without a doubt, would otherwise be lost to this disease.

We also have to think about all those who have already been exposed and who will continue to be exposed to asbestos already in our environment. It is estimated that 23 million Americans have been occupationally exposed over the past 50 years and are now at risk. 9/11 and Katrina only emphasize this even more. Asbestos is virtually omnipresent in all buildings built in the late seventies and for those who could develop mesothelioma as a result of these exposures, the only hope is effective treatment.

Mesothelioma has been an orphan in medical research. Until 3 years ago, there wasn't even a standard therapy approved by the FDA that did anything better than nothing at all. Even this approved treatment, which is regarded as the new standard of care, only prolongs life by 3 months. Hence, hand-in-hand with prevention, must come funding for early detection and improved treatment of the disease.

This is why research funding, a key component of the Murray bill, is also critical. Mesothelioma investigators are learning which genes and proteins can give a signature for the disease and which of these also control the pathways for mesothelioma. Since 1999,

research and advocacy for mesothelioma has been championed by the Mesothelioma Applied Research Foundation and 4 million dollars in seed money has been given to the brightest investigators in the world.

But we now need to have the Federal government help us in order to make sure that these promising findings will hold true in conducting expensive, challenging but necessary validation trials in the United States.

Senator Murray's bill will do this by establishing 10 centers of excellence across the United States for mesothelioma and help to accrue patients in sufficient numbers to run clinical trials. Senator Murray's bill would also mandate collaboration, not only among these centers but with the Intramural Program of the NCI and with the Department of Veteran's Affairs. The bill also will establish, through the National Institute of Occupational Health and Safety, efforts to establish this mesothelioma registry so we'll even know how many mesotheliomas there actually are out there so we can know the extent of the epidemic.

Three years ago, I was invited to the Senate to advocate for mesothelioma victims by endorsing Senator Murray's bill. Since that time, I've treated and operated on too many new patients, new patients who were diagnosed, treated, subsequently recurred and have already died, leaving behind families that only wanted to have longer time with their loved ones. Despite these tragedies, we are no closer to banning the cause of this cancer than we were in 2004.

The time has come for a war on mesothelioma, first by eliminating the use of asbestos and then by arming the soldiers with sufficient resources to find the disease in its early stages so that newer therapies can prolong their lives.

We owe this to our heroes.

[The prepared statement of Dr. Pass follows:]

PREPARED STATEMENT OF HARVEY I. PASS, M.D.

Chairwoman Murray, Ranking Member Isakson, and distinguished members of the U.S. Senate Employment and Workplace Safety Subcommittee, my name is Harvey Pass and I am the Director of the Division of Thoracic Surgery at the NYU School of Medicine in New York. When I was Head of Thoracic Oncology at the National Cancer Institute (NCI) in Bethesda, I was the first to make mesothelioma a research priority, and I have continued my mesothelioma clinical and bench work investigations at the Karmanos Cancer Institute in Detroit and now in New York. I am also a board member and head of the Scientific Advisors for the Mesothelioma Applied Research Foundation. I am proud that my research in mesothelioma has been funded by the NCI, American Cancer Society and the Veterans Administration.

Mesothelioma is a diffuse tumor of the linings of the lungs, abdomen or heart which kills close to 3,000 victims in the United States. It relentlessly invades the tissues of the chest and abdomen, causing excruciating pain in most afflicted patients at the end of their life. The average survival for individuals with mesothelioma is 1 year.

The cause of mesothelioma is exposure to asbestos.

Mesothelioma takes 30 years to exhibit symptoms, or roughly between 10 and 50 years from the time of the asbestos exposure. The mesothelioma victims of today built our country as pipe fitters, insulators, boilermakers, electricians and shipbuilders, among others and a third of today's mesothelioma victims served the United States on Navy ships or in shipyards. Families have been destroyed by second hand fiber exposure when these heroes brought asbestos from their livelihood into their home. It is estimated that asbestos is in 30 million U.S. homes as well as in thousands of products. Exposure to asbestos is unpredictably dangerous: a

minimum or one-time exposure or a very low exposure over time may be enough to trigger the catastrophic events leading to mesothelioma.

It is essential that we ban asbestos now and find alternatives to asbestos use. Armed with mountains of evidence about the profound risk of asbestos, it is our responsibility to act by stopping the flow of asbestos into our environment and protect future generations. By finally banning asbestos, Senator Murray's bill will save lives which without doubt, would otherwise be lost to this disease.

We also have to think about all who have already been exposed, and who will continue to be exposed to the asbestos already in our environment. It is estimated that 23 million Americans have been occupationally exposed over the past 50 years and are now at risk. 9/11 and Katrina have potentially exposed countless more. Asbestos is virtually omnipresent in all the buildings built before the late 70s. For those who could develop mesothelioma as a result of these exposures, the only hope is effective treatment.

Mesothelioma has been an orphan in medical research. Until 3 years ago, there was not even one treatment for mesothelioma approved by the FDA as better than doing nothing at all. Even this approved treatment, which is regarded as the new standard of care, is associated with only a 3 month survival advantage in the majority of cases which are detected in an advanced state. Hence, hand in hand with prevention must come funding for early detection and improved treatment of the disease.

This is why the research funding component of Senator Murray's bill is also so critical. Mesothelioma investigators are learning which genes and proteins can give a signature for the disease, and which of these also control the pathways that will turn a normal cell into a mesothelioma. Since 1999, research and advocacy for mesothelioma has been championed by the Mesothelioma Applied Research Foundation, which has awarded over \$4 million in seed money grants to the brightest investigators around the world. But we now need the Federal Government to partner with us in order to make sure that the promising findings will hold true by conducting expensive, challenging, but necessary trials across the United States in order to get these promising approaches from the lab to the patients' bedsides.

Senator Murray's bill will do this by establishing 10 centers of excellence across the United States for mesothelioma, and help to accrue patients in sufficient numbers to run meaningful clinical trials. Senator Murray's bill would mandate collaboration not only among the 10 centers, but with the NCI's own intramural programs, and the Department of Veterans Affairs. The bill will also support the National Institute for Occupational Safety and Health (NIOSH) efforts to establish a mesothelioma registry and tissue bank so that we can come to grips with the magnitude of the epidemic and provide valuable resources to be shared among investigators.

Three years ago, I was invited to the Senate to advocate for mesothelioma victims by endorsing Senator Murray's bill. Since that time, I have treated too many new patients who were diagnosed, treated and subsequently recurred, and died, leaving behind families that only wanted to enjoy more time with their loved ones. Despite these tragedies, we are no closer to banning the cause of this cancer than we were in 2004. The time has come for a war on mesothelioma, first by eliminating the use of asbestos, and then by arming the soldiers with sufficient resources to find the disease in its early stages so that newer therapies can prolong their lives. We owe this to our heroes.

The CHAIRMAN. Thank you, Dr. Pass.
John Thayer.

STATEMENT OF JOHN THAYER, PIPEFITTER AND SUPERVISOR, OFFICE OF THE ARCHITECT OF THE CAPITOL, WASHINGTON, DC

Mr. THAYER. Good morning. Before I start my testimony, I'd like to be able to introduce the guys that I'm going to be talking about, which are these 10 guys right here, just so everybody can be aware of who they are.

My name is John Thayer. I'm a Supervisor of the Capitol Power Plant Tunnel Crew that I just introduced. We work for the Architect of the Capitol. There are 10 of us in the tunnel crew. We maintain the five miles of underground utility tunnels that supply heat and cooling to all of Congress and some 20 other Federal buildings

on Capitol Hill. Some of us have worked in the tunnels for well over 20 years. If you are comfortable sitting in this room, it's because the team of pipefitters, welders and electricians and insulators—they're all doing their job.

The tunnels are a tough place to work. Temperatures get up to 160 degrees. Big slabs of concrete fall from the ceilings and the cramped passages are thick with welding fumes, pulverized asbestos and concrete dust. The Capitol Police refuse to patrol the tunnels out of concern for their officers and for the safety of their dogs. The Fire Department—the DC Fire Department—will not attempt an emergency rescue in the tunnels but will only come as a body recovery because there are no communication systems and access is extremely limited.

On behalf of the entire crew, I want to express our support for your initiative, Senator Murray, in holding this hearing on banning asbestos. We know from personal experience the lethal danger that asbestos presents because we have worked in and breathed asbestos for decades and unfortunately are now beginning to suffer the health consequences.

And if workers at the heart of the U.S. Government are being put at risk, then imagine what it must be like for the millions of unseen workers in private industry. Just over a year ago, we found out the AOC had been misleading us for years about the extent of our workplace exposure to asbestos. The Architect knew but didn't tell us that the concentration of air-borne asbestos in the tunnels was extremely toxic, 30 to 40 times over the legal limit.

We discovered this when the Office of Compliance filed an unprecedented complaint against the Architect for not fixing the safety problems that the Office of Compliance had identified 7 years earlier.

So we asked to see the medical records from our annual employment physicals conducted by the Office of Attending Physician. My own records stated that I had severe scarring of my lower lung fields and that my lung age interpretation was 118 years old. I was 33 years old at the time. No one ever told me this. On the contrary, every year the doctor gave me a piece of paper saying that I was cleared to work in the tunnels. We all got those pieces of paper.

We needed to find out the truth. Three of us drove all the way to Detroit in July of 2006 to see Dr. Michael Harbut, a nationally renowned expert at the Karmonos Cancer Institute, who has diagnosed and treated thousands of patients with asbestos-related diseases.

We learned that we all had signs of asbestos exposure. Let me tell you, that was a long, quiet drive home. Three relatively young, otherwise healthy guys who don't smoke, who live pretty simple lives, learning that we had caught something at work that might kill us or probably going to and that we could die a lot earlier than normal.

Even worse, the Architect had let us carry this deadly asbestos home with our clothes every day for years, without telling us this posed a risk to our wives and children.

Banning asbestos is important, not only for the safety of the workers who handle it but also for their families. We all have now been examined by Dr. Harbut, traveling at our own expense, to get

the standard of care recommended by the American Thoracic Society under Dr. Harbut's leadership, the care denied to us by the AOC.

Preliminary results showed that we all have symptoms of asbestos exposure, not to mention the elevated risks of lung cancer, colon cancer and mesothelioma. We are essentially ticking time bombs.

Last spring, we sat in hearings held by Senator Allard and heard the Architect lie to Congress about the hazards we face on the job. We were not allowed or invited to speak. AOC management claimed that they had just learned about the asbestos problem when in fact, they had known about it for years. They blamed us for our own medical conditions by claiming that we would not follow safety rules, when in fact, they had never provided us or mandated respirators or decontamination until April of 2006.

The AOC continues to misrepresent working conditions in the tunnels. It has tried to sweep the problem under the rug by hiring contractors to turn power washers on the asbestos in some of the tunnels. Contractors that regularly violate OSHA procedures have been reported to the Office of Compliance. Contractors that endanger the public by allowing asbestos to be released through the air and through the grates in the sidewalks. As a matter of fact, asbestos has been blowing through these grates for years but it has gotten worse.

I have tried in vain to stop them from running the exhaust fans. Recently, they restarted the fans that I said to secure, along the street along the Hart Building.

It's been a year since we wrote to several Members of Congress pleading for help but neither the Architect or Congress has effectively addressed the problem. In fact, just 2 days ago, personal exposure monitors for two of my men showed six times the allowable exposure.

We have also been retaliated against for blowing the whistle on our unsafe working conditions and have filed a complaint with the Office of Compliance. Unfortunately, we are now preparing to take that to Federal Court. We should not have to go to court to be compensated for our injuries and defend our right to speak out for a safe workplace.

We call on you, the Members of Congress for whom we work, to do what you can do to see that we are all compensated for irreparable harm that we have suffered and we especially call on you to ban asbestos from all workplaces so that no one has to risk their own welfare and that of their families just to earn a living.

The CHAIRMAN. Thank you very much, Mr. Thayer. Thank you to all of your workers for being here today as well.

I'm just going to ask one or two questions and turn it to Senator Isakson. I know that Senator Brown needs to get to the floor to preside so I want to get to you quickly here.

But Mr. Thayer, I just wanted to ask you, to your knowledge, has OSHA inspected the tunnels that you work in?

Mr. THAYER. No, they have not. We actually asked for a NIOSH inspection but they are going through the AOC because of what they call security reasons. They'll probably have to subpoena them to get down there.

The CHAIRMAN. OK. I understand when somebody works around asbestos, there are some pretty clear rules that they are supposed to follow and in fact, I think people are supposed to get certified in asbestos abatement. Do the contractors that worked on removing asbestos in the Capitol tunnels use asbestos abatement procedures, like walling the area off with plastic sheeting or wearing personal protective gear?

Mr. THAYER. They do but they don't—they're not following the standards and that's what some of these pictures are. That's an actual removal since we complained. If you notice, that grate that is right there?

The CHAIRMAN. Right.

Mr. THAYER. That grate is inside the containment and right above that grate is the stoplight—they are actually physically removing asbestos inside that tunnel at the same time that people are walking by over the tunnel. They didn't follow proper containment. Their containments are all broken down.

The CHAIRMAN. When was that picture taken?

Mr. THAYER. These were taken probably in August.

The CHAIRMAN. Of this year?

Mr. THAYER. 2006.

The CHAIRMAN. OK. Thank you, Mr. Thayer. I'm going to turn to Senator Isakson and then Senator Brown.

Senator ISAKSON. I'd be happy for Sherrod to—do you want to go ahead, Sherrod? I'd be happy to yield to you and then I'll take—

Senator BROWN. Thank you very much, Senator Isakson and Madame Chair, thank you very much and thank you for this panel. I appreciate especially Mr. Thayer being here and your service and your courage and the men and women that you work—that you supervise and you work with. Too often around here, we don't pay attention to people who make these buildings run and people who serve the meals and people who clean the rooms and thank you very much for what you do to make this government work better and we owe you way more than an apology for the treatment of workers around this institution.

Mrs. Vento, thank you. I served with Bruce for 8 years and there is no better advocate, stronger voice for workers in this country than Bruce Vento, well beyond the confines of St. Paul and your part of Minnesota for what he did and the courage and the outspokenness and the advocacy that he played.

Where I live in Lorraine, Ohio, a county just west of Cleveland, is the home of ship builders and the home of steelworkers and the home of defense workers, especially during World War II and the number of asbestos cases and related—the lung diseases and others are way too high and we've done way too little and I so much applaud, as a cosponsor, so much applaud the legislation that Senator Murray has worked on and like you, Dr. Castleman—I'm sorry I missed the first part of your testimony but I read it and like you, I assume that asbestos manufacturing use had been banned in this country and it should be.

I have to go and preside on the floor but I appreciate so much what all of you have done, being here and especially the legislation, so thank you, Madame Chair.

The CHAIRMAN. Senator Isakson.

Senator ISAKSON. Thank you very much. Dr. Pass, can you—is there a difference between chrysotile and amphibole asbestos in terms of the exposure and mesothelioma.

Dr. PASS. Well, Senator, that's a great question and I would—and there are certain things which I'm an expert at and I wouldn't presume to give testimony on something that would not be absolutely 100 percent correct.

Senator ISAKSON. I respect that.

Dr. PASS. So I will not answer that question but defer that to experts that I could refer this panel to so that there will be no confusion about it.

Senator ISAKSON. Dr. Castleman, I'll ask you the same question. I know you're not a medical doctor but you have a doctorate in public health, I think.

Mr. CASTLEMAN. Yes. The U.S. regulatory agencies have been prevailed upon time and again to set a different standard for chrysotile asbestos than for the amphibole varieties and they have always declined to do that. This has been done with EPA, with OSHA. In experimental animal studies, chrysotile asbestos is just as deadly as the amphibole varieties and to the extent that there may be a less, somewhat lesser hazard with chrysotile on the issue of mesothelioma, any information on that isn't perfectly clear. The chrysotile is still accepted by everyone as a cause of lung cancer and asbestosis and the bans in the European countries have all—most of them have been put into place after the amphibole varieties of asbestos were no longer mined and sold.

Senator ISAKSON. Well, I'm glad you mentioned that. That's kind of the next question I was going to ask. You mentioned the exception on the chlorine in some of the European Union countries but is there any differentiation in those 40 countries that ban asbestos, between the chrysotile and the amphibole?

Mr. CASTLEMAN. No. The ban is for all types of asbestos and the only exception is the chlorine plants using the diaphragm self-process.

Senator ISAKSON. One other question from your testimony. I just—again, I've been reading and I'm kind of like a sponge. I haven't absorbed everything I need to yet. You mentioned the Durham's Water Putty and the talc component that contained the asbestos, is that correct?

Mr. CASTLEMAN. Right.

Senator ISAKSON. I keep reading the term—the difference between processed asbestos and naturally occurring so I'm just asking this to learn. Does the asbestos naturally occur in the talc and that's how it got in there or was the asbestos a prescriptive part of the formula for the putty?

Mr. CASTLEMAN. It naturally occurs in the talc. That is what I was trying to convey by talking about contaminant asbestos. It occurs—asbestos is a mineral but it also occurs as a contaminant of other minerals. So we find it in some talc deposits.

Senator ISAKSON. The reason I ask that and I have deep regard for Chairman Murray and what she is trying to accomplish. I haven't read the case, but I would imagine when the courts threw out the EPA's first ban of asbestos, it had something to do with differentiating between chrysotile and the other or some other dif-

differentiations. When something naturally occurs in a mineral that is a part of a product, how do you ban—how do you keep it out of there?

Mr. CASTLEMAN. Well, in the case of the talc that contains asbestos from upstate New York, this was recognized as a hazard by Dr. Selikoff, who analyzed a number of these drywall-patching compounds and published his results in 1975. One of the products that he analyzed and found asbestos in was a product that used the talc from upstate New York and that company stopped—the company is called Bond-X and they reformulated their product to eliminate that type of talc. So they're, as far as I know, still selling the product or at least they went on selling the product after that and they were simply able to reformulate it without using the asbestos contaminated talc.

Senator ISAKSON. Thank you very much. Dr. Harvey—and my time is about up but one quick question. You made a statement with regard to that, you objected to the term, any concentration, in the legislation? Dr. Wilson, I'm sorry.

Mr. WILSON. Yes, I made the statement.

Senator ISAKSON. I apologize. Dr. Wilson, I'll restate the question. You made a comment with regard to any concentration in the legislation. Would you elaborate on that for one second?

Mr. WILSON. Well, when I calculate risks of air pollution, of cancers, of asbestos, of anything else, I believe firmly on the basis of good understanding, particularly that of Sir Richard Peto, that there is no threshold for almost anything for causing trouble. And the EPA has recognized that for cancers but it has not recognized that for noncancers like air pollution, which they should.

Now then you cannot ban everything in any concentration. So you've got to decide what concentration you're going to have. To say zero or in any concentration is the first step in understanding but we've been trying to understand asbestos now for 30 years. We can go beyond that. We can do better. We can say—we can allow it in a concentration of less than 0.015 per milliliter for example. But just to say zero is displaying a lack of understanding and knowledge.

Senator ISAKSON. Thank you and Madame Chairman, I apologize that I asked you to provide for Senator Specter and he hasn't showed so I will acknowledge and make sure everybody knows that you were great in doing that. I'm sorry he didn't come.

The CHAIRMAN. All right and if he arrives, we will certainly allow him to speak. Well, Dr. Pass, let me just follow up. Dr. Wilson said that you have to have some kind of threshold. Give us the medical background of how much exposure can cause asbestosis or mesothelioma.

Dr. PASS. Senator Murray, I don't think we have an answer to that question and I'll preface it because there are other aspects to individuals that have to do with susceptibility. You could have an individual that is exposed to an extraordinarily low amount of asbestos and still develop mesothelioma and that is the problem with why you need to just get rid of it because it's so unpredictable. There are studies now that are being done, not only in the United States but in foreign countries, trying to figure out the genetic basis of susceptibility to asbestos-related injury. So as long as we

know that it may not be a certain threshold but there may be certain individuals who are more exposed. Our problem is to find those individuals who are exposed and to protect them. But the first way to protect everybody is to get rid of the inciting stimulus and that's why I support your bill.

The CHAIRMAN. OK. Well, I appreciate that. So you're basically telling us, we don't know how much—how many fibers can cause some of these diseases, so—

Dr. PASS. In a human, correct.

The CHAIRMAN. So by setting a threshold, we may actually be allowing people to be lethally exposed because we don't know what a safe level is. That is also why we need more research as well as banning asbestos.

And let me ask you, too, do you know much about the Mesothelioma Registry?

Dr. PASS. I do. I know that they are doing wonderful work through Pittsburgh to set this up. They are struggling because they are very concerned about whether this is going to be an effort that is going to be funded so that they can continue a second year. They have reached out to mesothelioma centers that can provide them with information, to provide specimens as well as information on patients that we—anonymously—that we have seen so we can find out the magnitude of the problem. But this is a difficult situation for this group. They don't know when the funding is going to run out. Their mandate is to set up this network among us, as mesothelioma and asbestos experts, to help them to figure out how bad this problem is because again, we say that it is between 1,400 and 4,000. We really haven't looked at that and that's why we have to support them.

The CHAIRMAN. OK. And the registry is important because it allows us to know who has been exposed and helps us track where they've been exposed?

Dr. PASS. That is correct as well as to provide very, very important information and specimens across centers that are not available except at certain centers so that everybody is sharing in a network so that we can use this material for discovery and for treatment.

The CHAIRMAN. Thank you. Dr. Castleman, you emphasized the need to immediately address the importation and sale of asbestos brakes and construction panels in the United States, in your testimony. Can you tell me what the Federal Government actually needs to do to make that change happen?

Mr. CASTLEMAN. Well, you don't need to pass a new law to accomplish some of these things. As you suggested, OSHA could go to parts stores and pull some parts off of the shelves and analyze them, the imported brake parts that are coming from countries like China and Columbia and Mexico and Brazil.

The CHAIRMAN. I think this one here is from Australia.

Mr. CASTLEMAN. And the ones that don't say they have asbestos, I wonder if some of them do. OSHA has never cited any company for failing to put warning labels on its products, even though they've had an asbestos standard requiring warning labels since 1972 and we now know that, for example, Ford and Chrysler didn't put warning labels on their brake parts until the 1980s but they've

never been subject to surveillance and citation for this and this is something OSHA needs to do, otherwise we're basically inviting people to sell us products without putting the warning labels, bring them in from China through some fly-by-night distributor.

The CHAIRMAN. Right.

Mr. CASTLEMAN. Another thing that we can do—the EPA has the authority to summon from the automobile companies the information on whether they are still selling asbestos containing brakes as replacement parts, whether they are still selling new models of cars with asbestos containing friction materials or gaskets. The U.S. Customs Service has the means to provide us the names of the foreign exporters and the U.S. importers of these products so that these companies can be directly questioned about whether these materials that they are bringing in are made with asbestos. And finally, the International Trade Commission can change its import classification so that we can have a separate classification for imported brakes that contain asbestos and for imported brakes that don't. So we can see from which countries we might be importing a public health hazard. At this time, the import commodity classifications are old classifications from the days that these were all asbestos products.

The CHAIRMAN. Right. In your testimony, you talked about the EPA revising a guidance document for mechanics and particularly for the mechanics who work on brakes that have asbestos. Even if we ban asbestos immediately, we're going to have a lot of cars out there, for a long time that, have brakes with asbestos in them. This is a copy of the so-called Gold Book. We're waiting for EPA to issue their new guidelines for the public, but it's not out yet. I'd like you to comment on when they do get it out, how long will it take for us to deal with this problem? How do we deal with the fact that for a long time to come, we're going to have brakes out there that have asbestos in them?

Mr. CASTLEMAN. Well, that's right. When people are servicing cars, they don't know what the brakes were that were in the cars and there could be asbestos in the brake drum dust that they have to remove when they do the servicing so the mechanics need to be warned about these things. The original Gold Book is now being revised and has been sent up to the Office of Management and Budget for its final review. The people at the EPA are hoping to have that out in the next month or so. I don't know what changes the Office of Management and Budget is asking the EPA to make in the Gold Book.

The CHAIRMAN. Is 1986 the last time the EPA issued any warning to mechanics, and guidance for preventing asbestos exposure?

Mr. CASTLEMAN. Right. Twenty years, more than 20 years ago.

The CHAIRMAN. And nothing has been released since, warning mechanics?

Mr. CASTLEMAN. That's correct. But when this was originally put out, it was done in a really big way. They sent copies of this to all the vocational and technical schools in the country and they really did a lot to get the word out to people about the dangers of asbestos and doing brake repair and clutch repair. So this is something—if the document that comes back from the EPA this time

around is good, then a similar type of outreach would be warranted.

The CHAIRMAN. This needs to be done right.

Senator Isakson.

Senator ISAKSON. Real quickly just two things. And this is really to anybody that knows the answer to this question. Today—now, 2007, the asbestos that is in the chlorine filters, that is in the brake linings, which are the two things that have been mentioned. Do we know whether it is chrysotile or amphibole? Or is it all just chrysotile now?

Mr. CASTLEMAN. The only type that is used anywhere now is chrysotile.

Senator ISAKSON. That's the only type?

Mr. CASTLEMAN. There is no commercial amphibole mining and sales anywhere since the 1990s.

Senator ISAKSON. I just want to be sure that was on the record.

Mr. CASTLEMAN. The contaminants tend to be amphiboles, the contaminants of vermiculite and talc are amphiboles.

Senator ISAKSON. Which gives me the second technical question. I'm just trying to make sure I'm right for Dr. Wilson. You stated in this range of potency that the ratio was 5—I thought I heard you say 500 to 1 in terms of the range of potency between the two. Is that what you said?

Mr. WILSON. That is the question under dispute. One particular office says its 500 to 1. Now, the real data comes from a study from Lancashire, which Julie and Peter talked about. He thinks—that was about 1975—and on that study, the number of mesotheliomas from pure chrysotile was at least five times less. He didn't see any than it would be if it were like amphibole. This has not been brought into any of the EPA studies and in all my work, I automatically do two calculations. One by EPA and then divide by 5 to say it's at least less than this, as Julie and Peter says. And there is no real evidence that chrysotile causes mesothelioma to any appreciable extent. It's almost always been—it's always been amphiboles involved in it as well. So that's—and that's an interesting point. I just want to correct one thing. I want to say, I do not believe there is a threshold below which things cannot cause cancer. And I do believe that's almost any substance and for good, theoretical reasons about what we call perturbation theory. And it's outlined by Sir Richard Peto in 1975. So any thought—when one talks about a limit, that's a limit, a practical limit and one accepts it to get a negligible risk and a risk as low as in other parts of society.

Senator ISAKSON. I just want to acknowledge, Madame Chairman, it's so refreshing. Dr. Pass and Dr. Wilson both have qualified their answers by saying they are in dispute or they couldn't testify precisely. We hear so many people who testify absolutely. It's wonderful to see professionals who qualify their remarks for us when we're trying to learn a very technical subject and I appreciate all your testimony and Sue, it is terrific to see you again.

The CHAIRMAN. Well, thanks, Senator Isakson. This is precisely why I put research into this bill, many of the rules and regulations we see coming from the government right now, are developed with 1960s technology. Yet, we are seeing people diagnosed every single

day, who have been exposed to asbestos and we don't know how much exposure—maybe just a tiny amount and that's why I believe we need to ban asbestos. Another important part of this bill is research and Dr. Pass, maybe you could comment on why that is needed.

Dr. PASS. When I was at the NCI in the 1990s, there was very little to do for mesothelioma. Now, very frankly, 2007, we have publications on at least two biomarkers that are now going into validation, to try and see whether these are markers of asbestos-induced injury that may particularly go to mesothelioma. That's a huge thing. I mean, there aren't markers for lung cancer but for mesothelioma, we may have good markers. There is now a consortium of individuals that have gotten together. They've given up this idea of silos and universities and are working as a program project to study these carcinogenic questions and also to extend this not only nationally in hot spots like Libby but also internationally in Turkey. This is a moment to seize for mesothelioma research. It's a moment to seize for asbestos-related research and therefore, anything which can promote collaborative research with very talented investigators. There may be PhD's, scientists, genomic experts—now is the time to get these people together to concentrate on this one disease, mesothelioma but also we will learn so much about the carcinogenicity of asbestosis, also lung cancer, that we must seize the moment and the money needs to be there for these individuals to have it and that's why the bill that mandates collaborative interactions is so important. Thank you.

The CHAIRMAN. Thank you. And Mrs. Vento, I'm going to end with you. You've done a lot of work on the Mesothelioma Applied Research Foundation. Can you tell us a little bit about what you're doing?

Mrs. VENTO. Well, the Mesothelioma Applied Research Foundation is an organization that includes several folks whose lives have been personally touched. Mary Cosentino, a mom and an attorney and a great woman from Illinois as well as several of us who have lost loved ones and physicians—Dr. Pass is a member of our board as well. Our Foundation is doing what it can to secure and fund research grants, to most especially help the patients and their families to reach out to them and to do everything that we can to increase the awareness and most definitely to help you pass this bill. So thank you very much.

The CHAIRMAN. Thank you. I want to thank all of our witnesses for being here today. Senator Isakson, I want to work with you on a bipartisan basis. I want to see this signed by the President. We're going to keep working until we get this done. I really appreciate everybody's input and John, I especially want to thank you and your workers who are here today for talking to us about a very real issue that all of us need to focus our attention on. I appreciate each one of you for having the courage to be here today. To all of our witnesses, thank you again for your testimony and I am going to ask unanimous consent that the hearing record remain open 7 days for additional relevant materials to be submitted. And we will adjourn, subject to the call of the Chair.

Thank you.

[Additional material follows.]

ADDITIONAL MATERIAL

STATEMENT OF SENATOR SPECTER

Chairwoman Murray, thank you for the opportunity to address the subcommittee today.

I share your concern about protecting American workers and their families from the deadly effects of asbestos exposure in the workplace. Indeed, I have spent much of the last several years in the Senate fighting for the people sickened by this deadly substance by crafting legislation to guarantee them timely and fair compensation.

I led this fight with the help of Senator Leahy and many other members from both sides of the aisle who believe strongly in enacting a comprehensive legislative solution that would put an end to an irrational and unfair tort system that has failed truly sick asbestos victims. And I must note the extraordinary time and energy invested by the late Judge Edward Becker, my friend of 56 years, in bridging differences and crafting solutions on extraordinarily complex legislation. Judge Becker made countless trips to Washington from his home in Philadelphia to testify at asbestos hearings before the Judiciary Committee; to meet with stakeholders; and to speak individually with Senators to enlist their support in having Congress fulfill its responsibility on this issue.

Judge Becker's devotion to finding a Federal solution to the asbestos problem, and his concern for those affected by the broken system, continued through his last days.

As I address the subcommittee this morning, I do so as a Senator who not only has been, but continues to be, committed to passing Federal asbestos legislation for our country's workers and their families.

The Nation's courts for years have implored Congress to address the asbestos litigation crisis. The Supreme Court has stated that the current flawed system "defies customary judicial administration." In 1997 the Supreme Court observed:

The most objectionable aspects of this asbestos litigation can be briefly summarized: dockets in both Federal and State courts continue to grow; long delays are routine; trials are too long; the same issues are litigated over and over; transaction costs exceed the victims' recovery by nearly two to one; exhaustion of assets threatens and distorts the process; and future claimants may lose altogether. *Amchem Products v. Windsor*, 521 U.S. 591 (1997).

The issues are extraordinarily complex. It took years to build consensus among some of the most powerful interests in Washington—trial lawyers, organized labor, manufacturers, employers, and insurers, just to name a few. Working with Judge Becker, my colleagues and I provided a forum for frank discussion among the parties affected by various proposals. Above all, we sought fairness, practicality and sound policy. We held 48 large "roundtable" meetings; Judge Becker alone held 65 separate meetings with individual stakeholders; there were hundreds of other meetings and thousands of hours of work. In fact, your staff was present at some of these roundtable meetings. I cannot think of any other legislative

undertaking that involved more time, more effort, or more commitment to understanding and addressing the issues.

At the beginning of the last Congress, in 2005, Senator Leahy and I introduced S. 852, a comprehensive bill to resolve the crisis in our civil justice system. We built upon the significant effort to resolve the asbestos problem of then-Chairman Hatch, who in 2003 introduced a bill establishing a proposed trust fund and an administrative no-fault process. The Senate undertook significant action on S. 852 in 2005, despite calls from skeptics who said that moving the bill from the Judiciary Committee was nearly impossible. On May 26, 2005, the committee reported S. 852 favorably on a strong bipartisan vote of 13–5 following a grueling 6-day mark-up that involved late nights and several hundred amendments. When Majority Leader Frist brought the bill to the floor, the Senate voted overwhelmingly (98–1) to invoke cloture on the motion to proceed. We fell one vote shy of the 60 votes needed to overcome a budget point of order, a procedural hurdle thrown in the way. The bill was sent back to the Judiciary Committee, where we continued our work.

On May 26, 2006, Senator Leahy and I introduced S. 3274 “The Fairness in Asbestos Injury Resolution Act of 2006,” (the FAIR Act), which incorporated many amendments filed during the floor debate on S. 852, including an alternative allocation system for small and medium-sized business proposed by Senator Kyl, and Senator Landrieu’s amendment relating to filing procedures for individuals exposed to asbestos as a result of natural disaster.

During this process, even you Senator Murray, presented compelling testimony before the Judiciary Committee during the 108th Congress about the need for enacting Federal legislation aimed at banning the distribution of asbestos containing products in the stream of commerce. As a result, the Judiciary Committee worked closely with your office in crafting a bipartisan solution that became part of the broader asbestos trust fund bill. As you move ahead on your asbestos ban legislation, **I trust that the compromises we reached will be honored.** These compromises included (among other things): (i) carefully negotiated DOD exemption language adopted during committee markup last Congress; (ii) exemptions for roof coatings and diaphragms used in the production of chlorine; and (iii) a specific definition of asbestos.

While the most recent FAIR Act of 2006 was not considered by the full Senate, I remain committed to finding a solution to this litigation crisis that leaves victims with serious disability without compensation. I want to ensure justice for the tens of thousands of Americans who already have developed debilitating or deadly asbestos-related diseases, and those who will become ill in the coming years. I applaud your continued efforts to protect our Nation’s current and future workers from asbestos exposure, but I believe a more comprehensive solution is necessary.

Today, asbestos victims filing tort claims receive an average of 42 cents of every dollar spent on asbestos litigation. Sadly, the other 58 cents are swallowed by the high transaction costs of litigation, where 31 cents of every dollar go to defense costs, and 27 go to plaintiffs’ attorneys and other related costs.

We don’t want more companies to go bankrupt. We don’t want asbestos victims suffering without the help they need and deserve.

I will continue to fight for a fair and bi-partisan bill that will do right by victims and businesses across the country. The sheer number of claims continues to clog both State and Federal courts. Claims by unimpaired individuals have delayed payments and reduced the money available for the truly sick. Asbestos claims have driven many defendants into bankruptcy, leaving some victims without payment altogether and other victims diverted to bankruptcy trusts that offer, in some cases, cents on the dollar as a result of asset depletion. Wall Street continues to punish solvent companies for the unpredictability of their asbestos liability, preventing business growth and the creation of new jobs. Very recently—this year—there have been court rulings and media reports about conflicts of interest, multiple recoveries (“double dipping”), and fraud related to asbestos bankruptcy trusts—the result of which is that, even where there are assets available for payment, fair and just compensation still is not going to those who are impaired.

And in this time of talk about support for our troops, many of our Nation’s veterans who were exposed to asbestos during their military service suffer from asbestos-related diseases, including one of the deadliest cancers—mesothelioma. Because many of the companies that supplied asbestos to the military went bankrupt long ago, and because the Federal Government is immune from suit, sick veterans are often left with little or no compensation. Let me be clear about this tragedy. Our veterans gave years of their lives in service to our country, but when they contract deadly and painful illnesses caused by asbestos exposure during their service, we tell them “sorry, there is nothing we can do for you.” This is wrong. Congress owes our veterans a solution.

Today you have Capitol Hill Tunnel employee John Thayer testify as to his and other tunnel workers exposure to asbestos while working on the utility tunnels below the Capitol. Our bill would allow our tunnel workers fair and just compensation for any injuries they may contract due to this exposure.

While we did not enact an asbestos trust fund bill last Congress, our efforts were not in vain. Through hearings, Senate floor action, markups and meetings, we did shine light on fraudulent mass screening programs that generate falsified x-ray readings for unimpaired claimants, and medical certifications by doctors who never examined the “patients.” These programs drove the alarming rise earlier this decade of unimpaired asbestos claims that flooded the tort system to the detriment of the truly sick. Judges and prosecutors took notice and cracked down on these abuses. As a result of heightened awareness and enforcement, claims of the unimpaired have declined.

But many problems remain. Our veterans still have no relief. Families of other workers are left with medical bills and no compensation. The residents of Libby, Montana, where W.R. Grace operated an asbestos-contaminated mine until 1990, leaving residents and workers sick from asbestos exposure, have no hope of recovering adequate compensation; W.R. Grace is bankrupt.

I continue to work with Chairman Leahy and my colleagues to ensure that comprehensive asbestos reform remains a priority for the Senate. I have instructed my staff to continue assessing the un-

derlying asbestos litigation problem and to focus on ways to help our veterans and those suffering from mesothelioma, as well as putting an end to abusive litigation tactics in our civil justice system. Last fall, I had discussions with Senator McConnell about scheduling floor action on asbestos early this Congress. I have had recent discussions with Majority Leader Reid who, while noting admitted difficulties in scheduling floor time for this matter, said that he would try to find time for an asbestos bill this Congress.

We have a moral obligation to do more than criticize or even wash our hands of this problem. We must find a solution.

Chairwoman, Murray, I thank you for this opportunity to speak about an issue that is so important to so many and I look forward to continue working with you on this matter.

PREPARED STATEMENT OF LINDA REINSTEIN

On behalf of the Asbestos Disease Awareness Organization (ADAO), I represent thousands of victims and their families around the world who have become sick or died as a result of exposure to asbestos.

My name is Linda Reinstein, Executive Director of the Asbestos Disease Awareness Organization and now a mesothelioma widow. My husband lost his 3 year battle with mesothelioma on May 22, 2006. I am neither a lobbyist nor an attorney, only a volunteer.

We face an enormous public health crisis. As early as 1898, asbestos exposure was linked to disease. The stress and trauma is life altering for those Americans with known asbestos exposure waiting for time to reveal their medical fate.

The simple truth is—asbestos kills. Every year in the United States, 10,000 men, women and children die from asbestos-caused diseases. Asbestos diseases are incurable; preventing exposure is the only way to eliminate disabilities, diseases and deaths. Asbestos is the largest single cause of occupational cancer. Every year, 1 in every 125 men over the age of 50 dies from an asbestos caused disease.

Inhaling and swallowing asbestos fibers can cause malignant and nonmalignant diseases, such as, but not limited to, Mesothelioma, Asbestosis, Chronic Pulmonary Respiratory Disorders, Lung Cancer, Larynx, Esophagus, Stomach Cancer, Kidney and Bowel problems. A recent asbestos disease study sited, 65 percent of the victims suffer from cancer and the remainder 35 percent suffer from nonmalignant diseases.

Although mesothelioma annually claims the lives of an estimated 2,000 Americans, other cancers and respiratory diseases kill 8,000 more Americans. Many victims feel like they are breathing through a pinched straw, for every breath, every minute, every day. When the victims' oxygen levels become critically low, they are tethered to supplemental oxygen to prolong life. Lack of oxygen causes death by respiratory failure and/or cardiac arrest.

Early diagnoses can increase the treatment options for the patient and improve their quality of life. Patients initially diagnosed with asbestosis now live long enough to be diagnosed with mesothelioma at the end of their life.

Asbestos was widely used in the construction and attic insulation in millions of homes in the United States and Canada built before 1975.

In 1976, Congress passed the Toxic Substance Control Act and named asbestos as a toxic mineral.

In 1977 the International Agency for Research on Cancer (IARC) classified asbestos as a Category 1 Human Carcinogen, the highest cancer hazard classification for a substance.

In 1986 President Reagan signed into law the Asbestos Hazard Emergency Response Act (AHERA). This law and the regulations to enforce it were designed to prevent children or staff from being exposed to asbestos in the schools, but they have not been updated or revised since 1987.

In 1989 the EPA promulgated an asbestos ban, but within 2 years, the United States Court of Appeals for the 5th Circuit overturned portions of the regulations and the Federal Government did not appeal the decision to the Supreme Court.

In 2002, the collapse of the World Trade Center towers led to the release of hundreds of tons of asbestos from the towers. An estimated 20,000 responders, workers, volunteers and residents suffer from respiratory diseases. The annual direct treatment costs are \$140 million dollars. We can only extrapolate the cost of human tragedy and treatment expenses from the Hurricane Katrina disaster.

In 2006, the World Health Organization and the International Labor Organization in a policy paper issued in and a resolution adopted respectively agreed that: all forms of asbestos are classified as human carcinogens, no threshold for “safe” exposure exists, and the elimination of asbestos use is essential to stop the global epidemic of asbestos-related disease.

And now, younger victims are dying from diseases. Recently, a 9-year-old child was diagnosed with mesothelioma and died 3 years later. Victims of asbestos related diseases are completely innocent. They are firefighters and veterans, construction workers and engineers. They are the women who became exposed washing their husbands’ work clothes. They are children whose loving hug turned deadly.

Our data shows the common patient profile to be a 51 year old with no known occupational exposure.

- Leigh, mesothelioma victim, 27, believes she developed mesothelioma after walking to primary school through a factory yard where asbestos was cut.
- June, 53, mesothelioma victim, had no known occupational exposure.
- Adam, mesothelioma victim, dead at 33, had no known occupational exposure.
- Alan, mesothelioma victim, dead at 67, was briefly exposed to asbestos as a submarine engineer and while doing home repairs.
- Thomas, 57, asbestosis victim, worked for 27 years as a railroad electrician.

Asbestos diseases are difficult to diagnose and treat; many deaths are inaccurately recorded. Our statistics primarily report occupational exposures which is only one of six types of exposures that cause painful and often deadly diseases.

Types of Occupational and Non-Occupational Asbestos Exposure

- Occupational
- Take-home and Secondary
- Environmental (Naturally Occurring Asbestos)
- Consumer Products
- Deconstruction, Renovation or Implosions of Contaminated Buildings
- Unknown

Asbestos continues to be mined and exported from Canada. The United States and Canada remain the only two industrialized nations that have not yet banned the use of asbestos in common products while more than 40 countries have banned asbestos. Consumers are at risk with imported asbestos contaminated products such as brakes.

Most Americans assume their air, soil and water are safe from toxic contaminants—but as victims, we know the truth. Just walk the streets of Libby or New York City—they know all too well about irreversible effects of asbestos poisoning.

The asbestos ban will only be as effective as the laws are enforced. Presently, minimal fines and lack of enforcement make our existing laws weak and deadly asbestos exposure continues.

It is time to eliminate all asbestos caused diseases with education and prevention, while simultaneously investing in research for a cure.

These terrible facts ensure that there will be asbestos victims in America for decades to come. An immediate worldwide ban on the production and use of asbestos is long overdue, fully justified and absolutely necessary. Congress needs to ban asbestos and increase funding for research and education—laws we need and can agree upon today.

My testimony is dedicated to my late husband, Alan Reinstein, President of ADAO, who lost his mesothelioma battle on May 22nd 2006.

Our daughter is just 14 years old.

PREPARED STATEMENT OF JENNIFER JOY WILSON

The National Stone, Sand & Gravel Association (NSSGA) appreciates the opportunity to submit a statement for the record of the hearing on the “Ban Asbestos in America Act of 2007.” NSSGA supports rigorous regulation of harmful exposure to asbestos, which has long been regulated as a carcinogen. NSSGA, however, cautions that regulation and legislation addressing asbestos must have definitions and analytical methods that are based on sound science. Additionally, definitions and methods must be sufficiently accurate and precise to differentiate regulated asbestiform minerals and exclude prismatic, rock-forming minerals, which have never been found to cause health effects like those associated with asbestos. Current analytical methods for defining asbestos were designed to measure commercial asbestos in environments known to contain it, and therefore are inappropriate for the natural environment because they are incapable of distinguishing between asbestiform and prismatic, rock-forming minerals.

Based near the Nation's capital, NSSGA is the world's largest mining association by product volume. Its member companies represent more than 90 percent of the crushed stone and 70 percent of the sand and gravel produced annually in the United States and approximately 117,000 working men and women in the aggregates industry. During 2005, a total of about 3.2 billion tons of crushed stone, sand and gravel, valued at \$17.4 billion, were produced and sold in the United States. Without these important commodities, the Nation's infrastructure could not be built or maintained and the commerce and quality of life American's enjoy would be severely reduced. With over 11,000 operations nationwide approximately 70 percent of the Nation's counties house an aggregates operation, many with multiple operations.

Of considerable concern is that any legislation dealing with asbestos must define it accurately. Asbestos is a commercial term for six naturally occurring minerals that are composed of long, thin, flexible fibers that easily separate and become airborne. The six regulated asbestos minerals also exist in a fundamentally different structure as prismatic, rock-forming minerals, in prismatic crystal forms. These prismatic minerals are common rock-forming components of many igneous and metamorphic rock types found along the east and west coasts of the United States, in the Midwest and in Alaska. The problem is that the definitions and analytical methods that have been used to define and measure asbestos in air and bulk samples are not able to distinguish between the harmful forms of the minerals and those forms that pose no health effects.

In 1986, the Occupational Safety and Health Administration (OSHA) passed a regulation that tightened existing rules on the six asbestos minerals while expanding its rules to include three prismatic, rock-forming minerals. The mining industry, including the aggregates sector, challenged this action. In 1992, after public hearings, OSHA recognized the problem and concluded that exposure to these prismatic, rock-forming minerals does not cause the adverse health effects associated with asbestos.

The issue emerged again in the wake of asbestos contamination found at a vermiculite mine in Libby, Montana that has resulted in serious asbestos related illnesses occurring among miners there and with the Libby community. Several Federal agencies, including the Environmental Protection Agency (EPA) and the Mine Safety and Health Administration (MSHA), are currently examining the need for additional regulation of naturally occurring asbestos. The U.S. Geological Survey (USGS) and the National Institute for Occupational Safety & Health (NIOSH), non-regulatory agencies, are providing scientific information to help resolve these issues.

Federal asbestos trust fund legislation that died in the 109th Congress accurately defined asbestos minerals as follows:

ASBESTOS—The term “asbestos” includes—

- (A) chrysotile;
- (B) amosite;
- (C) crocidolite;
- (D) tremolitic asbestos;
- (E) winchite asbestos;
- (F) richterite asbestos
- (G) anthophyllite asbestos;
- (H) actinolite asbestos; and
- (I) asbestiform amphibole minerals.

Differences between the asbestiform and prismatic mineral varieties are evident in their physical form and not in their chemical composition. The challenge then becomes to differentiate between the two. This can be done through carefully drawn definitions and discriminate analytical methods. Currently analytical methods and fiber definitions for asbestos were designed for settings where commercial asbestos is expected to be present. They are not useful, however, in the natural environment, where asbestos is not usually present, because they cannot distinguish between asbestiform and prismatic, rock-forming minerals. Current analytical methods falsely identify many prismatic cleavage fragments as asbestos.

Federal legislation, if passed, without the proper definitions, could result in unjustified regulation of prismatic, rock-forming minerals as if they were asbestos. Confusing these minerals with asbestos will likely alarm miners, the public and the investment community unnecessarily and spur frivolous lawsuits. Companies in the construction materials industry could become targets of asbestos litigation, which has already forced many companies in other industries into bankruptcy.

Most importantly, failure to define asbestos correctly in legislation could result in ordinary prismatic rock-forming minerals being included in asbestos health risk as-

assessments, diluting the asbestos health risk assessment, and potentially resulting in occupational and public health overexposure to asbestos.

In addition to accurately defining asbestos, NSSGA believes new test methods are needed to measure the lower concentrations of asbestos that can occur in the natural environment. A voluntary laboratory accreditation program, similar to the National Voluntary Laboratory Accreditation Program, is needed to help assure local testing laboratories produce accurate results.

The American Society for Testing Materials (ASTM) published a new consensus test protocol in July 2006, D 7200-06, for measuring asbestos in the natural environment.

The logical entity to develop a national laboratory accreditation program based on the new ASTM protocol is the National Institute of Standards and Technology (NIST) in the U.S. Department of Commerce. NIST has worked for over 100 years with U.S. companies, universities, governmental agencies and other organizations to build the infrastructure—the technical support system—vital to the Nation's technological capabilities and its long-term economic competitiveness. NIST has the necessary scientific expertise and experience to undertake such a project, and its Chemical Science and Technology Laboratory is the Nation's primary reference laboratory.

Finally, NSSGA supports an independent study of naturally occurring asbestos to ensure consistency of effort in determining what actually is asbestos. Currently, so many agencies are involved in studying the issue including MSHA, EPA, USGA, NIST, and NIOSH, that NSSGA believes the result could be more confusion and a panoply of testing methodologies. NSSGA supports an independent study by the National Academy of Sciences or the Health Effects Institute, both well regarded scientific agencies with experience in studying this issue.

In conclusion, NSSGA supports efforts to ban asbestos in America, but urges caution and a recognition that asbestos exists naturally in the environment. Therefore, it is imperative that any legislation accurately defines asbestos in order to distinguish prismatic rock-forming minerals that are not harmful to human health from true asbestos. Also, due to the fact that previous testing methodologies were created for determining asbestos in commercial environments, NSSGA supports development of a laboratory accreditation program, based on the new ASTM test protocol for determining naturally occurring asbestos, to be done by NIST, as well as an independent third-party study to be undertaken by either the National Academy of Sciences or the Health Effects Institute.

PREPARED STATEMENT OF KERRY SWIFT

In 2002, after several years of complaints regarding deficiencies in the Asbestos Management Plans, and major contamination by asbestos floor tiles, all four of Brookfield Connecticut Public Schools were extensively cleaned of asbestos fibers by professional contractors.

It was decided that in order to open schools on time in September, abatement would be delayed until a future date. Instead, a Monitoring Plan consisting of periodic air/dust sampling would be conducted to monitor the environment for any continued accumulation of asbestos fibers.

During this testing, continued chrysotile contamination from the remaining floor tiles was a problem, but in Whisconier Middle School, the routine air testing discovered anthophyllite asbestos in the art room, this type of asbestos was also found in microvac dust testing of the room. For several months, the source of this ongoing contamination remained a mystery. Extensive bulk testing of the art materials in the room was conducted. Finally, by using Transmission Electron Microscopy (TEM), traces, under 1 percent, of anthophyllite asbestos, which had been undetectable using Polarized Light Microscopy (PLM), were found in clay containing talc. The clay had been purchased from Sheffield Pottery in Massachusetts. The Material Safety Data Sheets (MSDS) from Sheffield, for this clay, indicated talc from R.T. Vanderbilt containing “non-asbestiform” anthophyllite and “non-asbestiform” tremolite as one of the ingredients. Once the clay was replaced with a clay that did not contain talc, no anthophyllite asbestos was detected in air and dust tests.

However, several months later, the anthophyllite contamination reappeared. Bulk testing again found the source to be talc clay, this time from Amherst Pottery Supply. The school had inadvertently bought asbestos-talc-containing clay again.

According to the lab reports of the air testing, using the AHERA counting standard, structures, which met the criteria for the definition of an asbestos fiber, were found in the air, as high as 0.0184 structures/cubic centimeter (s/cc), which is almost double the 0.01 s/cc standard most public health regulations allow for public occupancy.

We've been told by the Connecticut Department of Public Health that "many" schools in Connecticut are using the same talc clay from Sheffield Pottery. If Brookfield hadn't had the Monitoring Program, which we are not aware of ever being done in any other school system, Brookfield's children would still be using this asbestos-talc clay as well, and be working in this unseen contamination every school day.

Does R.T. Vanderbilt's talc contain asbestos, or non-asbestiform anthophyllite and tremolite fibers? Frankly, as a parent, I don't care how it's classified. I don't want it in my child's lungs. R.T. Vanderbilt can continue to quibble with the regulators over the precise definition of an asbestos fiber, but while this argument drags on, children in art rooms everywhere are using clay containing this talc. Can't we say enough is enough and protect our children?

We urge you to support the complete ban on asbestos.

(Brookfield Parents, Kerry Swift, Brookfield, CT 06804 and Kathleen Rossland, Brookfield, CT 06804.)

RICHARD A. LEMEN, PH.D., M.S.P.H.,
CANTON, GA 30115,
March 18, 2007.

Hon. PATTY MURRAY,
U.S. Senate,
Washington, DC 20501.

DEAR SENATOR MURRAY: I am writing to respond to the comments of Professor Richard Wilson of Harvard University's Department of Physics and Center for Risk Analysis. In Professor Wilson's comments to the Senate Employment and Workplace Safety Subcommittee on March 1, 2007, he made reference to the safety of the current Occupational Safety and Health Administration's (OSHA's) standard for asbestos, which is 0.1 fiber/cc as a time-weighted average over an 8 hour workday.¹ Several of Wilson's contentions are misleading. I will address many of his incorrect assertions below. However, as co-author of the 1976 recommendation to adopt the current asbestos standard, I'd first like to provide some background on the genesis of today's standard.

Background on the Existing Asbestos Standard

The current standard of 0.1 fiber/cc as a time-weighted average over an 8 hour workday was first proposed in 1976 by the National Institute for Occupational Safety and Health (NIOSH) in a Revised Recommended Asbestos Standard.² Previously, in 1972, NIOSH had recommended a standard of 2 fibers/cc based on data supporting the British Occupational Hygiene Society's (BOHS') standard on asbestos. The data came from a study conducted on a Turner and Newell asbestos textile facility in the UK, which was first studied by Dr. Richard Doll in 1955.³ In 1965 Knox et al.⁴ reported on additional lung cancers from the Doll cohort (Doll had asserted that all of his lung cancer cases had exposures prior to the 1931 government-industry regulations). The 1965 study and another by Knox et al. in 1968⁵ formed the basis for the 2 fiber/cc recommendation of NIOSH in 1972. Knox said of his study that it should be noted that, "In this factory chrysotile is predominantly used, but it cannot be affirmed that workers have not been exposed to crocidolite at all. It is certain, however, that none have worked with crocidolite for any considerable part of their working life."

The same year as NIOSH proposed its 2 fiber/cc recommended standard, Lewinsohn published a reanalysis of the Knox cohort, which showed that a greater prevalence of abnormalities existed than earlier reported, including in individuals

¹Wilson R, 2007. Comments of Professor Richard Wilson, Department of Physics & Center for Risk Analysis, Harvard University on the Proposed Asbestos Ban, Senate Employment and Workplace Safety Subcommittee under the Senate Health, Education, Labor, and Pensions Committee, March 1, 2007, Dirksen Senate Office Building Room 430, Washington, DC.

²NIOSH, 1976. Revised Recommended Asbestos Standard. U.S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health. Primary responsibility for development of this document was shared by Richard A. Lemen and John M. Dement, with technical consultation provided by Dr. Joseph K. Wagoner. December, DHEW (NIOSH) Publication No. 77-169.

³Doll R, 1955. Mortality from lung cancer in asbestos workers. *Br J Ind Med*, 12: 81-86.

⁴Knox JF, Doll RS, Hill ID, 1965. Cohort analysis of changes in incidence of bronchial carcinoma in a textile factory. *Ann NY Acad Sci*, 132: 526-535.

⁵Knox JF, Holms S, Doll R, Hill ID, 1968. Mortality from lung cancer and other causes among workers in an asbestos textile factory. *Br J Ind Med* 25: 293-303.

employed after 1950.⁶ For these reasons, as outlined in the 1976 Revised Recommended Asbestos Standard, NIOSH maintained that the original 1972 NIOSH-recommended standard be revised because it was not protective. NIOSH wrote, “The BOHS-recommended standard of 2 fibers/cc was based on data related only to asbestosis and the Society clearly cautioned that, since a quantitative relationship between asbestos exposure and cancer risk was not known, it was not possible at that time to specify an air concentration which was known to be free of increased cancer risk. (BOHS 1968)”⁷

Furthermore, based on this emerging scientific data on asbestos health risks, NIOSH recommended, *for the first time in the United States, that the only way to eliminate asbestos-related disease in the workplace was to ban asbestos use.*⁸ Additionally, to protect against the non-carcinogenic effects of asbestos, NIOSH recommended an analytical method within the workplace that at that time used the most reliable, reproducible, and available method to both industry and official agencies. That methodology was the phase-contrast microscope technique, which could adequately analyze particles down to a concentration of 0.1 fiber/cc, the lowest statistically reliable quantification limit.⁹

As history shows, in 1976 OSHA did not adopt this NIOSH Revised Recommended Asbestos Standard, despite scientific evidence that the OSHA standard of 5 fibers/cc and the NIOSH recommended standard of 2 fibers/cc were both inadequate for protecting workers from the deleterious effects from exposure to asbestos. In 1979, the directors of both OSHA and NIOSH appointed me as chairperson of a committee to evaluate the effectiveness of and risks posed by the OSHA standard of 2 fibers/cc. This committee evaluated the most recent asbestos data available at the time and again concluded this standard was not protective and needed revision.¹⁰ The committee again recommended lowering the standard to its lowest measurable concentration, utilizing the phase contrast methodology, *because there was no known safe concentration of exposure to asbestos.*

This recommendation, however, was not implemented until 1994, 8 years after OSHA had lowered its standard to 0.2 fibers/cc. Even at the current standard of 0.1 fiber/cc, OSHA projected a risk of about 3.4 excess deaths per 1,000 workers and a 20 year exposure risk to 2.3 per 1,000 workers.¹¹ OSHA’s linear extrapolation risk analysis is criticized because of its reliance only on high exposure measurements, which then projects risks on a linear curve downward. When OSHA conducted this risk analysis, it asked for other analyses at lower concentrations, however, none were forthcoming. This was mainly because no one had done such studies utilizing accurately lower exposure concentrations. Does this matter and if not, why not? These questions, and the answers to them, bring me to Wilson’s misleading assertions.

Exposure to Asbestos at the Current OSHA Standard Can Still Cause Asbestos Disease—There is No Threshold of “Safe” Exposure

In his testimony, Wilson said, “We strongly disagree with statements in the Ban Asbestos bill indicating the current U.S. permissible exposure level is not safe.” To support his claim, Wilson asserted that both Dr. Richard Doll and Julian Peto, researchers in the UK, questioned such low thresholds and went even further to critique their validity through supposedly scientific analysis. These included several reports to both the UK and U.S. governments concluding differing findings. While Dr. Doll never changed his conclusions that asbestos could be used safely at low enough concentrations, Julian Peto has revised his stance multiple times.¹² A 2007 paper by Geoffrey Tweedale validates many of the problems that Dr. Barry Castleman found upon close examination of Dr. Doll’s first analysis of lung cancers

⁶Lewinsohn HC, 1972. The medical surveillance of asbestos workers. Soc Health, 92: 69.

⁷NIOSH, 1976. Revised Recommended Asbestos Standard. U.S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health. Primary responsibility for development of this document was shared by Richard A. Lemen and John M. Dement, with technical consultation provided by Dr. Joseph K. Wagoner. December, DHEW (NIOSH) Publication No. 77-169.

⁸Ibid.

⁹Ibid.

¹⁰Lemen RA, Groth DH, Dement JM, Wagoner JK, Lloyd JW, Kang HK, Jennings RL (Jr.), 1980. Workplace Exposure to Asbestos Review and Recommendations. DHHS (NIOSH) Publication No. 81-103. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health and U.S. Department of Labor, Occupational Safety and Health Administration.

¹¹Occupational Exposure to Asbestos, Department of Labor, 29 CFR Parts 1910, 1915, and 1926, RIN: 1218-AB25, Occupational Safety and Health Administration, Final Rule.

¹²Tweedale G, 2007. The Rochdale asbestos cancer studies and the politics of epidemiology: What you see depends on where you sit. Int J Occup Environ Health, 13: 70-79.

among asbestos workers, and thus raises questions concerning protections for asbestos-exposed workers.¹³ Both the Tweedale and Castleman papers shed light on the inadequate and misleading science of the Doll and Peto analyses. Peto now predicts his earlier estimates of asbestos-related deaths in the UK to have been low; he now predicts the risks to be at least three to four times higher than his earlier projections and now expects some 150,000 or more deaths from this man-made epidemic in the UK.¹⁴ At the subcommittee hearing, Wilson failed to disclose the extent to which history has proven Peto to have been wrong.

All Six Types of Asbestos, Including Chrysotile, Are Dangerous, Not Only the Amphiboles

Wilson also asserts that the major epidemic of asbestos related disease is a result of amphibole asbestos use, which is virtually non-existent today. He suggests, therefore, that a ban affecting only chrysotile is not necessary. The science does not support his argument, and the fact that most studies of asbestos have evaluated mixed exposures to both amphibole and serpentine asbestos bring this conclusion into further contention. (Also, serpentine asbestos [chrysotile] is rarely found without being contaminated with amphibole forms of asbestos, such as tremolite). Studies of pure chrysotile asbestos in animals and laboratories refute his assertion and findings,¹⁵ while human epidemiology support a role of synergetic action when both types of asbestos are found together.¹⁶ The fact that 95 percent of asbestos used commercially was chrysotile does not support an only amphibole role in asbestos-related neoplasms,¹⁷ nor does the “amphibole hypothesis,” which purports the causative role of disease to be related only to amphiboles in the risk of asbestosis, lung cancer and mesothelioma.¹⁸ That all asbestos fiber types cause asbestos-related diseases is supported by every major scientific organization in the world, and it is only the exact potency of chrysotile, per dose to cause mesothelioma, when compared to that for amphiboles, which remains controversial. However, even when potency (on a dose by dose basis) is considered, the fact remains that chrysotile alone (or in its most common configuration, which is contaminated with an amphibole such as tremolite), is capable of causing asbestos-related diseases; no safe dose has been identified below which there is zero risk of developing both lung cancer and mesothelioma.¹⁹

Most Developed Countries and Their Scientists Support Banning Asbestos

Wilson's conclusion that there is no need for a ban on asbestos is based on his comparative risk analysis, suggesting what he refers to as “negligible risk,” something he does not define. His contention that risks are a necessary part of life for normal human activities must be judged against the overwhelming evidence of the risks posed by asbestos, combined with the fact that eliminating it would have no residual effect on society. Furthermore, his assertion that only 17 percent of the countries around the world have chosen to ban asbestos is very misleading when these 17 percent represent the countries with the most highly advanced scientific

¹³Castleman B, 2001. Re: Dolls 1955 study on cancer from workers. *Am J Indust Med*, 39: 237–240.

¹⁴Peto J, Hodgson JT, Matthews RE, Jones JR, 1995. Continuing increase in mesothelioma mortality in Britain. *Lancet*, 4 March, 345: 535–539.

¹⁵Frank AL, Dodson RF, Williams MG, 1998. Carcinogenic implications of the lack of tremolite in UICC reference chrysotile. *Am J Indust Med*, 34(4): 314–417; Kohyana, N, Shinohara, Y, & Suzuki, YI. Mineral Plants and Some Reexamined Characteristics of the International Union Against Cancer Standard Asbestos Samples. *Am J. Indus. Med.* 1996; 30: 515–528; Craighead JE, Mossman BT, 1982. The pathogenesis of asbestos-related disease. *NEJM*, 306 (21): 1416–1456.

¹⁶Acheson ED, Gardner MJ, *Mesothelioma and exposure to mixtures of chrysotile and amphibole asbestos*, *Arch Environ Health*. 34(4): 240–242 (1979).

¹⁷Smith AH, Wright CC, 1996. Chrysotile asbestos is the main cause of pleural mesothelioma. *Am J Indust Med*. 30: 252–266.

¹⁸Stayner LT, Dankovic DA, Lemen RA, 1996. Occupational exposure to chrysotile asbestos and cancer risk: A review of the amphibole hypothesis. *American Journal of Public Health*, February, Vol. 86; (2): 179; Lemen RA, 2004. Chrysotile Asbestos as a Cause of Mesothelioma; Application of the Hill causation model. *Int J Occup Environ Health*. Vol. 10; 233–239.

¹⁹Stayner LT, Dankovic DA, Lemen RA, 1996. Occupational exposure to chrysotile asbestos and cancer risk: A review of the amphibole hypothesis. *American Journal of Public Health*, February, Vol. 86; (2): 179; Lemen RA, 2004. Chrysotile Asbestos as a Cause of Mesothelioma; Application of the Hill causation model. *Int J Occup Environ Health*. Vol. 10; 233–239. *Hodgson JT, Darnton A*, 2000. The quantitative risks of mesothelioma and lung cancer in relation to asbestos exposure. *Ann Occup Hyg*, 44(8): 565–601; Landrigan, PJ, Nicholson, WJ, Suzuki, Y, & Lado, J. The hazards of chrysotile asbestos: a critical review. *Ind Health*. 1999; Jul; 37: 3: 271–80; IARC. IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man—Asbestos Volume 14. International Agency for Research on Cancer, World Health Organization, Lyon, 1977; IPCS. Environmental Health Criteria 203: Chrysotile Asbestos, International Program on Chemical Safety, World Health Organization. 1998.

communities and the strongest public health protections. His arguments do not comport to the scientific opinions of the world's major scientific bodies, but rely on a small selected group of papers by authors, only a few of which have conducted research or contributed to the valid scientific research on the health effects of asbestos. Some of Wilson's cited publications appear as commentaries in publications of dubious distinction, i.e., *The Apocalyptic*, some are not even scientifically peer reviewed publications, and some represent his own commentaries, while the rest are selected because they support Wilson's own arguments. While I respect Wilson's right to express his opinions, I feel it important that your record reflect the prevailing scientific opinions of scientists engaged in the actual research that has contributed to our knowledge concerning the health consequences from exposure to asbestos.

Naturally Occurring Asbestos Is Not the Bill's Focus, Nor Should It Be

Wilson goes on to assert that because asbestos is a naturally occurring mineral, its outcroppings will still cause exposures, even after a ban. This has limited validity because what he doesn't point out is that until the commercial exploitation and use of asbestos in man-made products, background concentrations were essentially nil (to the best of our knowledge). Nor does Wilson provide any supporting documentation or evidence for his claim that the "natural risks are much greater than the residual risks of processed asbestos." While he then mentions the infamous example of the asbestos contamination in Libby, he ignores the fact that the town was contaminated as a result of the industrial processing of asbestos-contaminated vermiculite; it is not as if the people of Libby were harmed merely by living near naturally occurring asbestos. It is obvious that a ban will not eliminate the risks posed by naturally occurring asbestos or by the millions of asbestos containing products already in place in homes, businesses, factories and vehicles. Wilson's argument is a red herring.

Conclusions

Wilson's call for a broader definition of asbestos is something the bill should and can do. NIOSH is also proposing an expanded definition in its recently released draft report, "Asbestos and Other Mineral Fibers: A Roadmap for Scientific Research."²⁰ However, because such a massive research project can be misused, it is imperative that your bill require strict oversight of the NIOSH research. This could be accomplished by the appointment of an unbiased congressional committee to review the progress of this research, which should be conducted through a transparent, unbiased, scientifically valid process.

I would also point out the need for more research into the substitutes for asbestos to assure that they pose no harm. One review of such an approach to substitutes can be found in the 1999 Commentary by Harrison et al., in which the authors examine the European perspective for substitutes for chrysotile asbestos.²¹

I propose you weigh the scientific record documenting the dangers of asbestos, evaluate the public health merits of ending its use, consider what other advanced nations have chosen, and take the proper action to further eliminate the risks of continued asbestos use in the United States. By banning asbestos, the United States will continue its role in helping those less scientifically developed nations make sound scientific and public health decisions, while taking a major step to prevent further asbestos-related disease and death many Americans would otherwise experience from the continued use of asbestos.

If I can be of any assistance please do not hesitate to contact me. I enjoyed working with you in the early stages of drafting this legislation, and I offer my professional experience and technical expertise to you and your staff. Thank you for your longstanding commitment to ensuring that asbestos is banned in the United States once and for all.

Sincerely,

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Assistant Surgeon General, USPHS (ret),
Former Deputy and Acting Director,
National Institute for Occupational Safety and Health.

²⁰ Middendorf P, Zumwalde R, Castellal R, 2007. Asbestos and Other Mineral Fibers: A Roadmap for Scientific Research. February, Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health.

²¹ Harrison PCT, Levy LS, Patrick G, Pigott GH, Smith LL, 1999. Commentary: Comparative Hazards of Chrysotile Asbestos and Its Substitutes: A European Perspective. Environ Health Persp, 107 (8): 607-611, August.

CENTER FOR APPLIED STUDIES OF THE ENVIRONMENT,
NEW YORK, NY 10016-4309,
March 8, 2007.

Hon. PATTY MURRAY,
Chairperson,
Subcommittee on Employment and Workplace Safety,
U.S. Senate,
Washington, DC 20510-4701.

Hon. JOHNNY ISAKSON,
U.S. Senate,
Washington, DC 20510-4701.

Re: Senate Bill (S. 742) to Ban Asbestos in America Now

DEAR SENATORS MURRAY AND ISAKSON: First, we appreciate the opportunity for submission of post-hearing comments regarding a proposed bill to asbestos in the United States. Attached please find our post-hearing comments which provide supplemental and related information to the presentations and comments made during the March 1, 2007 hearing. We respectfully request your thorough consideration of our comments and scientific references. For your convenience, we list below the primary issues that are covered in our comments:

1. There is no global consensus that chrysotile asbestos should be banned. The majority of countries have a controlled use policy. The United States consumes less than a 0.1 percent of the world chrysotile asbestos production using it to fabricate products which have not been shown to release measurable amounts of airborne asbestos.

2. Risk assessment from the controlled use of chrysotile asbestos indicates the lifetime risk from asbestos related diseases would be about 75-fold below the upper limit EPA claims to regulate. We did not do risk assessments for the more dangerous amphibole asbestos fiber-types as they are no longer used in commerce.

3. The definition of asbestos used in the ban asbestos bill is not specific for asbestos but includes types of mineral fibers which are not asbestos and commonly occur. The Occupational Safety and Health Administration have already made a finding that these "new asbestos minerals" should not be regulated as asbestos. The bill calls for banning mineral ores if these "new asbestos minerals" are present at any concentration. These would create an asbestos problem in a significant percentage of U.S. mining operations for no rational public health purpose.

If you have any questions or need additional information please feel free to contact me.

Cordially,

ROBERT P. NOLAN, PH.D.,
Deputy Director.

POST-HEARING COMMENTS OF R.P. NOLAN, PH.D., A.M. LANGER, PH.D, AND M. ROSS, PH.D., J DUNNIGAN, PH.D., AND J. ADDISON

We appreciate Senators Murray and Isakson's willingness to have the record remain open for an additional week to allow for the submission of post-hearing comments.

SPECIFIC COMMENT ON ISSUES DISCUSSED AT THE SENATE HEARINGS

There is no global consensus that asbestos must go. We have reviewed the information available and there *exists a scientific basis for a public policy that allows for the controlled use of chrysotile asbestos to continue*. The asbestos ban in the European Union did not provide the substantial evidence that the 5th Circuit Court of Appeals felt was missing when it remanded the EPA's proposed asbestos ban in 1991. Nor did we see such evidence offered at the March 1st Senate hearings and we continue to believe the available evidence does not support claiming that *an unreasonable risk of injury* is associated with the controlled use of chrysotile asbestos.

The European Union has a population of 475,000,000 people living in 25 countries representing about 7 percent of the world's population. In excess of 2,000,000 tons of chrysotile asbestos continues to be used in the countries which have chosen not to ban asbestos. Without considering the views of just five such countries—China, India, Mexico, Brazil and Russia—representing about 2.7 billion people (40 percent of the world's population) a consensus cannot be formed and their decision not to ban is consistent with that of the United States 5th Circuit Court of Appeals.

There is much in the record about the use of asbestos-containing friction products and cement building materials. During the March 1st hearing, it was stated that the United States currently imports “over \$120 million worth a year” of brake linings and pads that are made with asbestos along with other asbestos-containing products. These assertions simply were not proven. The import statistics, as developed by the U.S. Census Bureau, and published by the U.S. Geological Survey (Table 1), “U.S. Imports of Products with Basis of Asbestos, Cellulose, or Other Minerals in 2006” only actually show the amount of chrysotile asbestos imported from Canada into the United States (2,230 metric tons).

All of the other categories of imported products are identified as *may or may not contain asbestos*. A variety of minerals and not just asbestos are included in Table 1 as imported products. And, the source of the products listed for import includes a number of countries that have banned asbestos, e.g., Australia, Finland, Denmark, Chile, United Kingdom, France, and Germany among them, further indicating these are likely to be non-asbestos products.

Another significant issue is that some of these products that may contain asbestos, are imported into the United States and trans-shipped to other countries for use. Hence, any ban asbestos legislation should examine the potential impact on international trade.

The information available about the extent to which asbestos continues to be used in friction products and cements is anecdotal and we should focus on the asbestos-containing products that we know are used in commerce. We can address concerns about the products of unknown composition when and if such information becomes available. Issues rose at the hearings (about the use of asbestos-containing friction products and cement building materials) that can be addressed by the current Occupational Safety and Health Administration (OSHA) asbestos regulations.

If these imported asbestos-containing products do not have warning labels concerning asbestos content as are currently required then this matter needs to be addressed by the appropriate government agency. If the asbestos permissible exposure limits (PEL) are being exceeded (as Mr. Thayer has alleged for the Capitol tunnel workers), these situations can be remedied immediately within the current laws. A ban on asbestos will not remedy these situations. The 5th Circuit commented that poor enforcement of the existing asbestos regulations cannot be used as a justification for an asbestos ban, a position placed in the record at the hearings.

We do not believe the record supports arguing for an asbestos ban on the basis of asbestos-containing brake shoes and lining and asbestos-cement sheet which might be coming into this country unlabeled and improperly used. When asbestos is added to these products in the 21st Century it is certain to be chrysotile asbestos as the amphibole asbestos fiber-types have left commerce. We believe that the controlled use of chrysotile asbestos does not present an unreasonable risk of injury. We urge your close attention to the attached annotated bibliography of scientific evidence regarding the issue of asbestos in automotive products (Appendix I).

We find the World Bank’s effort to *avoid the use of asbestos-cement materials* in the post-tsunami reconstruction of Indonesia to be without a compelling foundation. Many substitute materials have been referred to in these hearings and in other places as safe (and safer) than using chrysotile asbestos. No evidence has been offered to support this assumption. Is there medical and scientific evidence to indicate that the asbestos substitutes (at the levels of exposure which are likely to occur) are safer than exposure to chrysotile asbestos at the current U.S. permissible exposure level? If such information is available it should be provided. We do not believe such evidence exists.

The 5th Circuit also commented that there are carcinogenic risks associated with the substitutes for asbestos cement pipe such as vinyl chloride and ductile iron but the EPA refused to assess the risks of substitutes for asbestos cement pipe. When addressing friction products the Court noted unanswered questions about the safety of non-asbestos friction products when retro fixed to vehicles designed for asbestos friction products. In addition, they were concerned about the lack of toxicology testing for the substitute materials. We would argue that the health effects associated with the controlled use of chrysotile asbestos are very well understood making the use of untested substitutes problematic as exposure to the substitutes may present unknown health hazards.

It is without question that asbestos-related diseases and mesothelioma in particular are life threatening at best and painfully fatal at worst. The record does not reflect the point that *all the diseases commonly associated with excess asbestos exposure (asbestosis (pulmonary fibrosis), mesothelioma and lung cancer)* also occur in those with little background asbestos exposure. However, asbestos exposure *does increase* the frequency with which the malignant diseases occur but is not the only recognized cause of these diseases.

First the background. There is a natural background level for asbestos in the ambient which is predominantly chrysotile asbestos. It has been found in the air on remote Pacific islands where no naturally occurring asbestos is present and in ice cores collected from both the Arctic and Antarctic ice caps. Analysis of deep ice cores indicates chrysotile asbestos was airborne in both hemispheres prior to the commercial use of these minerals in the late 19th Century (Nolan *et al.* 2007).

Exposure to low levels of airborne asbestos is an unavoidable consequence of living on the Earth. We know of no one who has argued that these background levels of chrysotile asbestos from environmental exposure are associated with increases in asbestos-related disease. However, some environmental exposures to airborne amphibole asbestos (in certain geological locales) have caused mesothelioma and other asbestos-related diseases (Browne and Wagner 2001). Because these exposures are environmental do not assume they are associated with low cumulative asbestos exposures.

We would argue that background levels of airborne chrysotile asbestos are clearly safe rather than the more pessimistic view in “no known safe level for asbestos” given as a finding in the draft bill. There are *background rates and other causes for all the diseases associated with the inhalation of asbestos, but we are all exposed to asbestos and will continue to be even if a ban is implemented*. Only certain types of exposure (often to specific asbestos fiber-types) have been epidemiologically associated with an increased risk of developing an asbestos-related disease (Hodgson and Darnton 2000, Browne and Wagner 2001, Nolan *et al.* 2001, Price and Ware 2004). These for the most part have involved exposure to amphibole asbestos fiber-types.

Secondly, when the diffuse interstitial fibrosis usually associated with asbestosis occurs in the absence of excess asbestos exposure, it is called idiopathic pulmonary fibrosis. The word idiopathic means arising spontaneously or from an obscure or unknown cause. Asbestosis and idiopathic pulmonary fibrosis are pathologically so similar that the presence of asbestos (or asbestos bodies) in the pulmonary tissue is often the only differentiating feature. Idiopathic fibrosis may well have been the cause of New York City Police Officer Cesar A. Borja’s death earlier this year on January 23rd.

Although Officer Borja may have had some asbestos exposure due to the events of 9/11 his pulmonary fibrosis is more likely to have been a pre-existing idiopathic fibrosis (New York Times, 2007, Nolan *et al.* 2005). The cause of this officer’s death was widely mischaracterized in the electronic and print media as clearly 9/11-related and illustrates how poorly significant details concerning these types of cases are communicated to the general public by the media and taken up by the highest levels of government.

BANNING NON-ASBESTOS MINERALS ALONG WITH THE REGULATED ASBESTOS MINERALS

The definitions used in the bill are problematic in that it bans asbestos in *any* concentration from *any* material. Commercially viable deposits of amphibole asbestos minerals are very rare with only about 5 geological locales (South Africa, Australia, India, Finland and Bolivia) in the world where significant mining has taken place. All of these commercial amphibole asbestos mining operations are now closed. However, amphiboles are one of the most common silicates with an abundance of 5 percent by volume in the earth’s crustal rocks (Wedepohl, 1971).

Crushing non-asbestos amphibole minerals gives rise to prismatic cleavage fragments that morphologically resemble asbestos (Langer *et al.* 1991). Some have claimed exposure to these fragments present a risk of developing asbestos-related diseases. Because of the frequency of the occurrence of amphibole minerals virtually every crushed crystallized rock will yield cleavage fragments that might be mischaracterized as asbestos.

The Occupational Safety and Health Administration held rulemaking hearings on whether cleavage fragments and other non-asbestos fibers should be included in the asbestos standard based mainly on their morphological similarity to asbestos. The results of that rulemaking were published in the Federal Register in 1992. OSHA concluded that sufficient evidence exists to demonstrate that the non-asbestos amphibole fibers (cleavage fragments) present less of a health hazard than asbestos and did not belong in the asbestos standard (Nolan *et al.* 1991). OSHA further concluded that the bulk concentrations of such fibers are generally very low as are their airborne concentrations.

The language in the proposed ban bill defines non-asbestos fibers as asbestos; this error could potentially lead to regulatory action that carries no public health benefit. Furthermore two amphiboles (richterite, winchite) and a zeolite mineral (erionite) are specifically listed as if they were asbestos minerals. These three minerals, as defined, are not asbestos and do not belong in a bill banning asbestos. Richterite

and winchite, both amphiboles, can occur as massive non-asbestos minerals, only in Libby, Montana and in some deposits in Texas have these minerals occurred in asbestiform and the distinction is critical. The desire to re-define non-asbestos minerals as asbestos with the goal of regulating them as asbestos is not an acceptable scientific approach to regulatory policy that OSHA specifically noted in their rule-making. Interestingly for some reason, chrysotile asbestos is not specifically mentioned in this part of the bill.

The definition used in the ban asbestos bill for a mineral fiber fails to take note of the fact that although all asbestos particles are fibers the converse is not true. *All fibers are not asbestos.* Fibers occur in nature with 3 to 1 aspect ratios which are not asbestos. *The bill calls for the banning of acicular fibers which are not asbestos and commonly occur in ore deposits.* The fiber definition is poorly crafted. It does not include the criterion that the banned fibers should be respirable and of a specified length (5 microns or greater) but simply gives just an aspect ratio of length to width.

If passed with the current definition the bill would create an entire new class of asbestos minerals and ban them at the same time. *The bill should restrict itself to the 6 minerals currently regulated as asbestos and conform to the accepted mineralogical definition of asbestos* and abandon the “make it up as you go approach” (Ross *et al.* 1984, Langer *et al.* 1991). It should also reflect the current OSHA definitions and counting strategy employed for characterizing the occupational environment.

BANNING THE USE OF ORE DEPOSITS WHICH CONTAIN TRACES OF ASBESTOS MINERALS

Commercial ore deposits do occur in the United States which contain limited horizons where regulated asbestos minerals occur. By following the Mine Safety and Health Administration asbestos regulations these areas can currently be mined if the asbestos exposures are controlled. The seams of asbestos which occur in folded and dilated rock can be surprisingly limited but have been reported (Ross and Nolan 2003).

A risk assessment was undertaken for just such a case where grunerite asbestos (an amphibole also called amosite) was present in a limited area of a non-asbestos ore body (Nolan *et al.* 1999). The lifetime risk for the miners of developing an asbestos-related disease was equivalent to smoking a few cigarettes over their entire lifetime. Banning the controlled use of asbestos may very well limit our Nation's ability to operate many U.S. mining operations and limit or halt the development of new projects. Some of these involve strategic materials.

PUBLIC EDUCATION PROGRAM

If asbestos is banned the call for a public education program would seem to be moot. If we banned cigarettes would we need to have a program to tell people not to smoke? The dangers of asbestos are widely known to the general public and with a ban; exposure to asbestos in place would seem the only remaining issue. This would involve mainly the building trades which are already aware of the hazards of asbestos, and asbestos abatement practices are already highly developed. Many of the issues raised in this part of the bill either no longer occur or would be eliminated by the ban. The public education program requires re-thinking.

PROGRAM FOR ASBESTOS-CAUSED DISEASE

The bill calls for the annual expenditure of \$10 million for creating 10 research centers focusing on the treatment of diseases caused by asbestos. We recommend the inclusion of a basic science center among the 10 proposed, to focus on the properties of minerals which impart biological activity. A laboratory should include the collection and study of mineral content within the lung and other tissues. And the inclusion of epidemiologist and biostatisticians to critically evaluate patterns of morbidity and mortality among defined cohort.

RISK ASSESSMENT FOR ASBESTOS-RELATED CANCER AT THE CURRENT OSHA PERMISSIBLE EXPOSURE LIMIT FOR CHRYSOTILE ASBESTOS

Lung cancer and mesothelioma—both occur in the absence of asbestos exposure (Price and Ware, 2004). The most common cause of lung cancer is cigarette smoking and the risk of lung cancer can be increased by asbestos exposure.

Risk assessment can be used to understand the extent of asbestos-related disease we should expect with controlled use of chrysotile asbestos.

We will start by calculating the asbestos-related lung cancer deaths in the United States from controlled use of chrysotile asbestos. There are approximately 2.5 million deaths in the United States annually and let us assume they are all non-smok-

ers. We wish to discourage smoking as it is an important public health problem (Table 2).

$$Obs_L = Exp_L + \frac{R_L \times E_{CA} \times Exp_L}{100}$$

Our goal is to calculate the increase in the observed number of lung cancers (Obs_L). Approximately 2.5 million people die each year in the United States and we will assume that 5 percent (or 125,000) were exposed for 25 years at the current asbestos exposure standard of 0.1 f/ml.

Exp_L —Expected background of lung cancer deaths in the 125,000 deaths among non-smokers would be 0.8 percent or 1,000 non-smoking related lung cancers.

R_L —Risk of lung cancer expressed as a percentage of lung cancer deaths per f/mL x years of asbestos exposure. The R_L used is 0.062 obtained from Hodgson and Darnton (2000) (their Table 2) and is specific for chrysotile asbestos.

E_{CA} —The cumulative asbestos exposure is 2.5f/ml x years from 25 years of chrysotile asbestos exposure at the current asbestos PEL of 0.1f/ml x years.

Using these values the Obs_L for 125,000 deaths of non-smokers with 25 years of controlled chrysotile asbestos exposure is 1,001.5 where 1,000 lung cancers are background among non-smokers and 1.5 asbestos-related lung cancers. We will assume 2 asbestos-related lung cancers in this group and 1,000 background cases of unknown cause(s). If the entire population smoked the asbestos-related lung cancers would increase by 10-fold greater to 15 asbestos-related lung cancer cases while the number of smoking related lung cancers would be 10-fold above background or 10,000 cases, making the total observed 10,015 lung cancer cases. Even among smokers the increase in lung cancer risk from small cumulative asbestos exposures over a working lifetime of 25 years is small (Figure 1).

The number of mesotheliomas from the controlled use of chrysotile asbestos in the 2.5 million deaths each year can also be calculated. The number of asbestos-related mesotheliomas (O_M) depends on the type of asbestos one is exposed to, the cumulative exposure and the age at which exposure first occurs (mesothelioma is independent of smoking) and can be calculated by:

$$O_M = \frac{R_M \times E_{CA} \times T_{pop}}{100}$$

Where:

R_M —Risk of mesothelioma as a percentage of the total expected mortality (rather than the relative risk used in asbestos-related lung cancer). The R_M used, 0.001 is obtained from Hodgson and Darnton (2000) (their Table 1) (adjusted to 30 years of age at first exposure) and over estimates the chrysotile asbestos risk as some exposure to amphibole asbestos occurred in the cohorts used to determine the value of R_M .

E_{CA} —The cumulative exposure to chrysotile asbestos is 2.5 f/ml x years obtained by assuming 25 years of occupational asbestos exposure at the current OSHA PEL of 0.1f/ml, identical to what we assume for the lung cancer calculation given above.

T_{pop} —Here we will assume 5 percent of the 2.5 million deaths each year are exposed at the cumulative asbestos exposure of 2.5 f/ml x years making the total population at risk 125,000.

Solving for O_M :

$O_M=3.1$ mesothelioma cases or approximately 3 additional mesothelioma deaths from the controlled use of chrysotile asbestos among 2.5 million deaths each year.

If we assume that 5 percent of the 2.5 million deaths which occur in the United States each year are exposed for 25 years at the current asbestos exposure standard there would be 2 additional lung cancer deaths (in the absence of smoking) and 3 asbestos-related mesotheliomas from the controlled use of chrysotile asbestos at the current Occupational Safety and Health Administration permissible exposure level. It is important to note that these asbestos-related cancers are based on mathematical calculations and may not actually occur. The linear no threshold model is the most pessimistic (predicting greater disease incidence) in that it is designed to be the most protective for the workers. We know of no scientist who has expressed an opinion to the contrary. No one knows if there is a threshold and at these low cumulative asbestos exposures there may be no increased cancer risk our calculation represents a worst case scenario.

The five asbestos-related cancers would occur in 2.5 million deaths or 0.2 asbestos-related cancer deaths per 100,000 lifetimes (see Table 1 for a list of comparative risks). The available scientific evidence does not support the claim that controlled use of chrysotile asbestos presents an unreasonable risk of injury. With good industrial hygiene practices the risk of injury from a controlled use of asbestos policy compares favorably, or is lower by orders of magnitude, with other risks that society accepts (Nolan et al. 2001).

Currently there are approximately 2,500 mesothelioma deaths in the United States. Among the 2.5 million deaths each year the 2,500 mesotheliomas account for 0.1 percent of the mortality (Price and Ware 2004). The 2,500 mesotheliomas currently occurring each year in the United States does not occur equally among males and females but rather about 2,000 occur in males and 500 in females. The difference indicates that males are exposed in occupational environments where females work less frequently and where exposures leading to mesothelioma occur more commonly. The three mesotheliomas related to the controlled use of chrysotile would increase the total number of mesotheliomas to 2,503 an increase of about 0.1 percent of the mesothelioma mortality.

We do not know if all the difference in mesothelioma incidence between the sexes is asbestos-related but let us assume the *1,500 mesothelioma differences is all asbestos exposure related* for our analysis and none of the female mesotheliomas are asbestos-related. The background for mesothelioma in the United States would be about 1,000 cases per year or 0.04 percent (1,000 mesotheliomas in 2.5 million deaths) once the incidence among the sexes becomes equal eliminating the asbestos-related mesotheliomas (which is happening, Weill et al. 2004). The three additional mesothelioma cases from the controlled use of chrysotile asbestos would be 0.00012 percent (3 mesotheliomas in 2.5 million deaths) 300-fold lower than background. Such results could never be observed but only calculated using risk assessment.

The increased mortality for asbestos-related cancer at the current permissible exposure level of asbestos would be less than 5 deaths per year among the 2.5 million Americans who die each year or about 2 asbestos-related cancers per million deaths. This number is so low that these deaths can never be observed using epidemiological methods but can only be calculated using risk assessment. We reject the claim that "asbestos is unpredictably dangerous" some individuals may not understand how to describe the risk but asbestos-related cancers are among the most predictable of all the forms of human cancer (Hodgson and Darnton 2000, Yarborough 2006). Comparison with other risks is often useful in understanding if 2 asbestos-related cancers per million is an unreasonable risk of injury (see Table 2 for a list of comparisons).

Also assuming 5 percent of the population will be exposed to sufficient asbestos throughout their lives to have a cumulative exposure of 2.5f/ml x years is pessimistic and the actual number of people with exposure this high is most likely to be much lower. And, conversely we expect few scientists would argue that more than 5 percent of the population has a higher exposure.

The alleged 10,000 asbestos-related deaths per year reported as a finding in the bill is questionable and the 1,700–3,000 cancers per year in Professor Wilson's testimony is largely related to the past high exposure and to the use of the much more dangerous commercial amphibole asbestos minerals.

Do not let the small number of Asbestos-Related Cancer expected from the Controlled use of Chrysotile Asbestos conceal the Problems Uncontrolled Asbestos Exposure can Cause.

If the 2.5f/ml years were to crocidolite asbestos the expected number of mesotheliomas would be 500-fold higher or 1,550 cases which is approximately the current number of excess mesotheliomas among males in the United States. Assuming the risk of lung cancer increases linearly with exposure, the very high historical exposure led to very high increase in the risk of lung cancer and mesothelioma. Twenty-five years of asbestos exposure at the 1971 asbestos exposure limit of 12f/ml would lead to a cumulative exposure of 300 f/ml x years compared with 2.5 f/ml x years by the current standard making the lung cancer risk 120-fold higher. Historical chrysotile asbestos exposures could be 50f/ml or greater and the work week much longer than today leading to very high increases in lung cancer mortality far beyond what would be expected from smoking alone (Figure 1 & 2). The regulations controlling asbestos exposure were designed to reduce these risks and we would argue that they have been successful.

The Federal regulatory and research agencies in the United States have not developed risk assessments for the specific asbestos fiber-types and often calculate the risk for the asbestos-related cancer as a single risk including both lung cancer and mesothelioma. This does not reveal the important role cigarette smoking has in as-

bestos-related lung cancer and averages the mesothelioma potency of the various asbestos fiber-types. The departure of the amphibole asbestos minerals from commerce made this approach obsolete. There are also similarities between Hodgson and Darnton (2000) and the Federal asbestos risk assessments. A linear no threshold exposure response assumes any exposure, no matter how small, increases the risk of developing asbestos-related cancer. However, very small exposures cause very small increases in asbestos-related cancer risk, a risk comparison table and exposure-response curve can enhance our understanding of this (Table 2, Figure 1).

Now that commercial amphibole asbestos is no longer in the marketplace, we can find no scientific basis to justify a public policy banning the controlled use of chrysotile asbestos.

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Table 1.—From U.S. Geological Survey (2006) Annual Asbestos Commodity Report

HTS code	Category	Quantity (metric tons)	Value	Major sources ^a	Percentage of category value ^b
1524.00.30.00	Asbestos	2,230	\$995,854	Canada	90% of weight
6811.10.00.00	Corrugated asbestos sheet ^c	953	\$595,478	France ^d , Germany ^e	83% of weight
6811.30.00.00	Flat asbestos and sheet and tile ^f	103,890	\$7,688,123	Mexico, Chile, Canada	93% of weight
6811.30.00.00	Asbestos, pipe, tube, and other fittings ^g	462	\$46,163	Mexico	99% of weight
6811.30.00.00	Other asbestos products ^h	506	\$62,186	China	32% of weight
6812.50.00.00	Fibrous asbestos fabric clothing ⁱ	4	\$1,759	United Kingdom	100% of weight
6812.60.00.00	Felt, asbestos, and paper	NA	\$8,236	China	87% of value
6812.70.00.00	Composites of asbestos fibers (fibers)	NA	\$15,283	Canada	81% of value
6812.90.00.00	Other, miscellaneous ^j	30	\$4,896	Canada	100% of weight
6812.90.00.00	Yarn and thread ^k	12	\$9,803	Mexico	69% of weight
6812.90.00.00	Cord and string ^l	2	\$3,044	China	100% of weight
6812.90.00.00	Woven or knitted fabric ^m	29	\$76,889	South Africa	93% of weight
6812.90.00.00	Articles for use in civil aircraft ⁿ	NA	\$2,939	United Kingdom	100% of value
6812.90.00.00	Articles, articles, and parts ^o	148	\$670,744	Japan, India, China	94% of weight
6812.90.00.00	Other, building materials ^p	NA	\$69,447	Australia	100% of value
6812.90.00.00	Other, miscellaneous products ^q	NA	\$2,947	United Kingdom	61% of value
6813.10.00.00	Asbestos, pipe, tube, and other fittings ^r	NA	\$1,474,169	France	81% of value
6813.10.00.00	Other, articles, civil aircraft ^s	NA	\$1,154,795	Mexico	92% of value
6813.10.00.00	Other, articles, miscellaneous ^t	NA	\$4,135,112	United Kingdom, Japan	77% of value
6813.10.00.00	Miscellaneous asbestos products ^u	NA	\$96,427	Germany, Canada	31% of value
6813.10.00.00	Miscellaneous asbestos, other	NA	\$36,513,006	Japan, Canada	97% of value

NA, Not available.

^aManufactured in the United States.

^bPercentages are listed in decreasing order.

^cPercentage contribution of total imports by major import source, by weight or value.

^dArticles of asbestos, except of asbestos, other than the sheet.

^eSource: Italy's supplier of asbestos products only.

^fArticles with a basis of asbestos or with a basis of asbestos and asbestos substitutes.

^gArticles with a basis of asbestos, of other mineral substances, and of fabric.

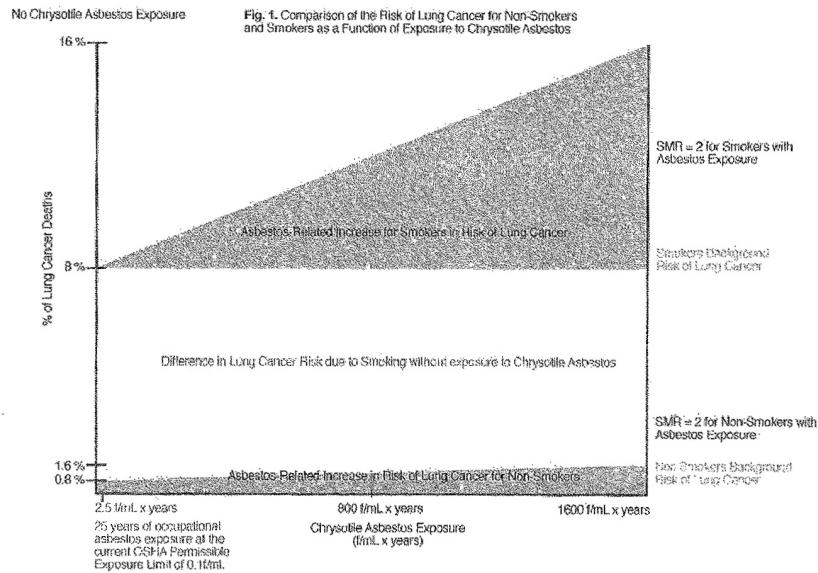
Source: U.S. Census Bureau.

Table 2.—Risk of Death in a Lifetime for Some Selected Environmental Exposures§

	Lifetime Risk per 100,000
Cigarette Smoking (lung Cancer only)	8,000
U.S. air pollution (calculated deaths from Assumed correlation)	2,000
U.S. Motor Vehicle accidents:	
All Deaths	1,200
Pedestrian Deaths	100
U.S. home deaths:	
All	600
Falls (mostly over age 65):	200
U.S. Natural Radiation background at sea level: (cancers) excluding radon gas	200
Person living with a smoker	100
Drowning deaths (non-transport caused)	80
Person living in a brick building (added natural radiation)	70
One transcontinental round-trip flight per year:	
Accident	15
Cosmic Rays	15
Upper Limit EPA Claims to Regulate	15
Falling Meteorite	15
Struck by a Failing Airplane Part	0.4
Smoking three cigarettes in a lifetime	0.3
U.S. population risk from controlled use of chrysotile asbestos	0.02†
Mining a limited seam of amphibole asbestos in a non-asbestos mine	0.05§

§ Adopted from Nolan RP, Langer AM, Wilson R: A Risk Assessment for Exposure to Grunerite Asbestos (amosite) in an Iron Ore Mine. Proceedings of the National Academy of Sciences 96: 3412–3419, 1999.

† For the chrysotile asbestos exposed sub-population (of 5 percent) this risk would be 20-fold higher.



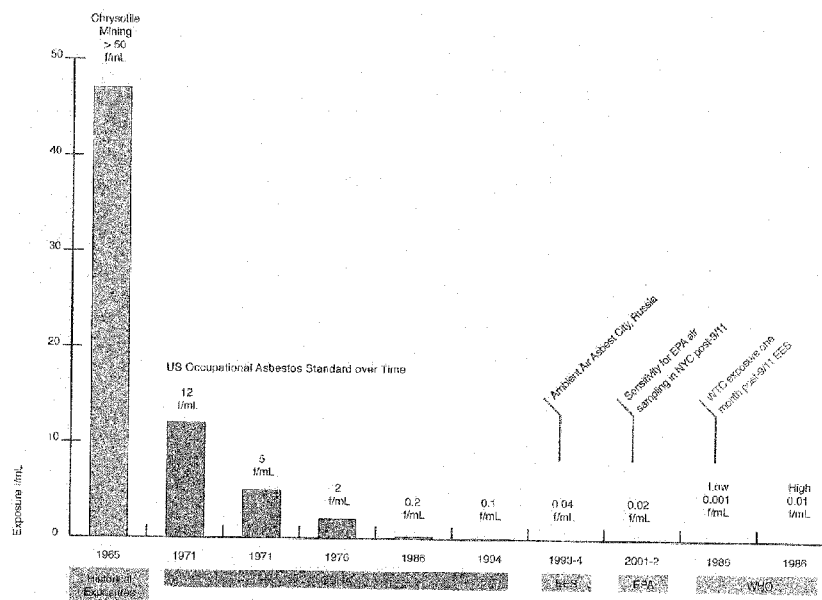


Fig. 2. Comparison of Asbestos Exposures from the collapse of WTC complex with historical, permissible and background asbestos exposures. Note: the United States Environmental Protection Agency (EPA) does not determine the actual airborne concentration of asbestos but only reports the number of structures per unit area of the collection filter (EPA f/mL above is estimated). EPA does not define structure as any of the six regulated types of asbestos therefore asbestos fiber type is not known. Earth and Environmental Sciences (EES) found the historical airborne asbestos concentration in NYC to be indistinguishable from those 28 days post-9/11.

APPENDIX I

ISSUE OF ASBESTOS IN AUTOMOTIVE PRODUCTS

Nowhere in the hearing record is there a distinction between chrysotile asbestos-containing automotive products and those containing amphibole types of asbestos.

This particular absence blatantly rejects the credibility of meta-analysis reviews on the health risks to workers manufacturing friction materials and to workers employed in brake servicing (Paustenbach *et al.* Environmental and occupational health hazards associated with the presence of asbestos in brake linings and pads (1900 to present): A "state-of-the-art" review. *Journal of Toxicology and Environmental Health—Part B—Critical Reviews* 7: 33–110). In this review, the authors concluded that no increase in risk was detected, except in those workers that have been exposed to mixtures containing amphiboles.

The following peer-reviewed studies from other sources are relevant, such as:

Blake, CL Dotson, GS Harbison RD: Assessment of airborne asbestos exposure during the servicing and handling of automobile asbestos-containing gaskets. *Regulatory Toxicology and Pharmacology*, 45: 214–222 2006.

In this paper, the authors state that—*The mean PCM and phase contrast microscopy equivalent (PCME) 8-h time weighted average (TWA) concentrations for these samples were 0.0031 fibers/cubic milliter (/mL) and 0.0017 f/mL, respectively. Based on these findings, automobile mechanics who worked with asbestos-containing gaskets may have been exposed to concentrations of airborne asbestos concentrations approximately 100-fold lower than the current Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) of 0.1 f/mL.*

Newhouse, ML, Sullivan KR: A mortality study of workers manufacturing friction materials: 1941–86. *British Journal of Industrial Medicine* 46(3): 176–179, 1989.

The study referred to in 5898 has been extended by 7 years. The authors confirm that there was no excess of deaths from lung cancer or other asbestos related tumors, or from chronic respiratory disease. After 1950, hygienic control was progressively improved at this factory, and from 1970, levels of asbestos have not exceeded

0.5-1.0 f/ml. The authors conclude: "It is concluded that with good environmental control, chrysotile asbestos may be used in manufacture without causing excess mortality."

Berry G, Newhouse, M.L: Mortality of workers manufacturing friction materials using asbestos. *British Journal of Industrial Medicine* 40(1): 1-7, 1983.

A mortality (1942-80) study carried out in a factory producing friction materials, using almost exclusively chrysotile. Compared with national death rates, there were no detectable excess of deaths due to lung cancer, gastrointestinal cancer, or other cancers. The exposure levels were low, with only 5 percent of men accumulating 100 fibre-years/ml. The authors' state: "*The experience at this factory over a 40-year period showed that chrysotile asbestos was processed with no detectable excess mortality.*"

To our knowledge, none of these publications have ever been challenged through the normal accepted channel used in peer-reviewed journals by the scientific community, that is: by submitting opposing views or critique in a commentary under Letter to the Editor.

NEVER AGAIN CONSULTING, INC.,
 ATTLEBORO, MASSACHUSETTS 02703,
 March 8, 2007.

Ms. JANICE CAMP,
 Committee on Health, Education, Labor, and Pensions,
 Subcommittee on Employment and Workplace Safety,
 U.S. Senate,
 Washington, D.C. 20510.

Re: Comments on Hearing On Banning Asbestos In America

DEAR MS. CAMP: I am submitting the following comments to be added to the record of the hearing on asbestos, held on March 1, 2007.

I am primarily responding to the testimony of physicist Dr. Richard Wilson. There are some crucial points that must be made in response to the question Dr. Wilson posed, "What has changed [since 1991] to justify the U.S. Senate's bill to ban asbestos now?" He argues that since amphibole asbestos use has decreased dramatically, the necessity to ban all asbestos products is no longer present. There are two fundamental flaws to this argument.

1. Amphibole asbestos that was used in the United State has not disappeared. Much of this asbestos remains on pipes (as in the Capitol tunnels) and in building structures (it was often sprayed on structural steel). As such, workers and members of the public are continuously exposed to this form of asbestos.

2. Chrysotile asbestos causes mesothelioma and when combined with amphibole exposure, it is as equally potent as amphiboles as a cause of mesothelioma.

Chrysotile asbestos is an undisputed cause of asbestosis and lung cancer.^{1,2,3} Chrysotile fibers are the most common fiber found at the proverbial scene of the crime—the pleura or the lining of the lung. These fibers are concentrated within the pleura of mesothelioma patients.^{4,5} In fact, many mesothelioma patients have documented exposure to chrysotile only, as evidenced by tissue burden analysis.^{4,5,6} Furthermore, those with exposure to chrysotile and amphiboles have double the rate of mesothelioma than those exposed to amphiboles alone.^{7,9} This information is especially important because scientists have long recognized the fact that chrysotile utilized within the United States contains the tremolite form of amphibole fiber.⁶ Processing does not remove tremolite from chrysotile. Dr. William Longo has examined a variety of finished chrysotile products and found that all of them contain some measure of tremolite contamination.^{10,12}

While it is certainly true that occupational safety procedures have decreased the threat that asbestos once posed, it is misleading to think that the threat has passed completely. There is no documented threshold limit below which asbestos exposure is not known to cause cancer. OSHA limits can only be so effective, and many subcontractors and small businesses are not adequately protected by occupational safety measures. In discussing the historical decrease in asbestos use, Dr. Wilson has, in fact, answered his own question. When the courts overruled the EPA ban on asbestos, the reasoning was based upon the projected cost of replacing asbestos use. Since today's usage is significantly lower than 16 years ago, the costs of banning asbestos are also much lower. Replacements for asbestos products exist. The economic strain predicted by the courts is no longer a great threat when compared to the costs of healthcare for asbestos-related diseases and the immeasurable price of lives saved.

I serve as a consultant to victims of asbestos exposure and to companies that have sold asbestos products.

Sincerely yours,

DAVID S. EGILMAN, M.D., M.P.H.,
*Clinical Associate Professor,
Brown University.*

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GOVERNMENT OF CANADA,
WASHINGTON, DC 20001,
March 8, 2007.

Hon. PATTY MURRAY,
*Chair, Subcommittee on Employment and Workplace Safety,
Committee on Health, Education, Labour, and Pensions,
U.S. Senate,
Washington, DC 20510.*

DEAR SENATOR MURRAY: Canada noted with interest the hearing of the Senate Committee on Health, Education, Labour, and Pensions Subcommittee on Employment and Workplace Safety on Asbestos: Still Lethal/Still Legal: The Need to Better Protect the Health of American Workers and Their Families, held March 1, 2007. Attached please find a number of observations regarding Canada's policy on asbestos use and the distinction between amphibole asbestos and chrysotile asbestos.

Yours sincerely,

CLAUDE CARRIÈRE,
Chargé d' Affaires, a.i.

GOVERNMENT OF CANADA COMMENTS TO THE SUBCOMMITTEE ON EMPLOYMENT AND
WORKPLACE SAFETY

Canada welcomes the deliberations of the Subcommittee on Employment and Workplace Safety on this important subject. Canada would like to take the opportunity to share a number of observations with the subcommittee. These comments principally focus on Canada's *Safe Use Principle* for minerals and metals, on Canada's controlled use approach and on our views with regards to asbestos, in particular the important distinction between amphibole asbestos and chrysotile asbestos.

THE MINERALS AND METALS POLICY OF THE GOVERNMENT OF CANADA

The *Safe Use Principle* promoted by the Government of Canada in its Minerals and Metals Policy (1996) is important in the context of the sustainable development of natural resources. This principle is an extension of life-cycle management and incorporates risk assessment and risk management principles. The *Safe Use Principle*, in building on the Toxic Substances Management Policy of the Government of Canada, recognizes that:

- minerals, metals and their products can be produced, used, re-used, recycled and returned to the environment in a manner that is consistent with sustainable development;
- society enjoys important benefits from the use of these natural resources, in conjunction with their sound management;
- certain mineral- and metal-containing products may pose risks to human health or the environment and, as a consequence, need to be managed throughout their entire life cycle;
- naturally occurring inorganic substances, such as minerals and metals, behave differently than synthetic organic chemicals and, as a consequence, require different risk-management approaches; and,
- minerals and metals, in and of themselves, are not candidates for bans, phase-outs or virtual elimination.

The Minerals and Metals Policy of the Government of Canada, and its integrated *Safe Use Principle*, conforms to World Trade Organisation (WTO) principles such as not creating unnecessary barriers to trade or market access and basing regulations on sound science supported by an appropriate risk assessment that accounts for the prevailing conditions in the country of interest.

For more information on Canada's Minerals and Metals Policy, please see http://www.nrcan.gc.ca/mms/policy/policy_e.htm.

THE CANADIAN PERSPECTIVE ON ASBESTOS-RELATED ILLNESSES, AND IN PARTICULAR, THE IMPORTANT DISTINCTION BETWEEN AMPHIBOLE ASBESTOS AND CHRYSOTILE ASBESTOS

The Government of Canada recognizes that all forms of asbestos fibres, including chrysotile, are carcinogenic. The main health risks associated with all forms of asbestos are primarily occupational, and relate to the inhalation of fibres that may lodge in the lungs in the course of mining, manufacturing and construction and renovation activities. However, contrary to amphibole asbestos, scientific studies show that chrysotile is a less potent carcinogen and less persistent in the lungs than the other forms of asbestos, and consequently poses a lower health risk.

Further, the Government of Canada recognizes that asbestos-related illnesses being observed now are occurring as a result of uncontrolled exposures associated with past practices and uses that are now unacceptable. It is well-known that there is a latency period between heavy dose exposures to asbestos fibres and the development of health effects. The illnesses we are currently seeing in countries that have intensively used asbestos fibres, predominantly the amphibole asbestos category, are linked in large part to past high-level exposures and to inappropriate uses, such as sprayed insulation and high temperature insulation products for pipes to prevent heat losses. In both cases, it was generally amphibole asbestos that was used. These uses were discontinued in the late 1970s.

The Government of Canada follows a controlled use approach to strictly control exposure to chrysotile through Federal, provincial and territorial workplace exposure limits and bans on some categories of consumer and workplace products under Canada's *Hazardous Products Act*.

The Government of Canada is of the view that the occupational health risks of chrysotile can be managed if regulations, programs and practices are in place to limit exposure to airborne fibres and that the risks would be no greater than posed by other occupational activities. Low levels of exposure pose low risks.

The Government of Canada also believes that where exposures and subsequent risks cannot be properly controlled, the specific use should be discontinued or prohibited. Consistent with its Minerals and Metals Policy, Canada targets its intervention at the product and use levels instead of the substance itself.

All forms of asbestos are regulated extensively in Canada. Canada's Department of Health has encouraged provincial occupational health authorities to adopt stringent workplace exposure limits for asbestos. The sale of friable products that were formerly available in Canada, i.e., products that release asbestos fibres under normal use, and the sale of pure asbestos to individuals have been banned under the *Hazardous Products Act*. In addition, emissions of asbestos into the environment

from mining and milling operations are limited under the *Canadian Environmental Protection Act*.

Today's strict workplace standards, combined with the ban of most uses of amphibole asbestos have reduced worker exposure levels to 1/10 to 1/1000 of the levels that existed in the past.

Today, chrysotile represents nearly 100 percent of the world consumption of asbestos as amphibole asbestos has essentially disappeared from the market and over 98 percent of world's the consumption of chrysotile is utilized in chryso-cement or friction products where the fibres are encapsulated and, in that form, do not pose a risk to human health.

In conclusion, Canada would like to thank the Subcommittee on Employment and Workplace Safety for the opportunity to share our experience with the controlled use of chrysotile.

[Editor's Note: For more information on asbestos exposure in Libby, Montana go to www.ephonline.org/docs/2007/948/abstract.html to review the study entitled "Vermiculite, Respiratory Disease and Asbestos Exposure in Libby, Montana: Update of a Cohort Mortality Study," (*Environmental Health Perspectives*) by Patricia Sullivan, National Institute for Occupational Safety and Health, Field Studies Branch, Division of Respiratory Disease Studies.

For more on efforts to ban asbestos go to www.ijoe.com/pfds/IJOEH_1301_Giannasi.pdf to review the article entitled "Ban on Asbestos Diaphragms in the Chlorine-related Chemical Industry and Efforts toward a Worldwide Ban" by Fernanda Giannasi.]

[Whereupon, at 11:12 a.m., the hearing was adjourned.]